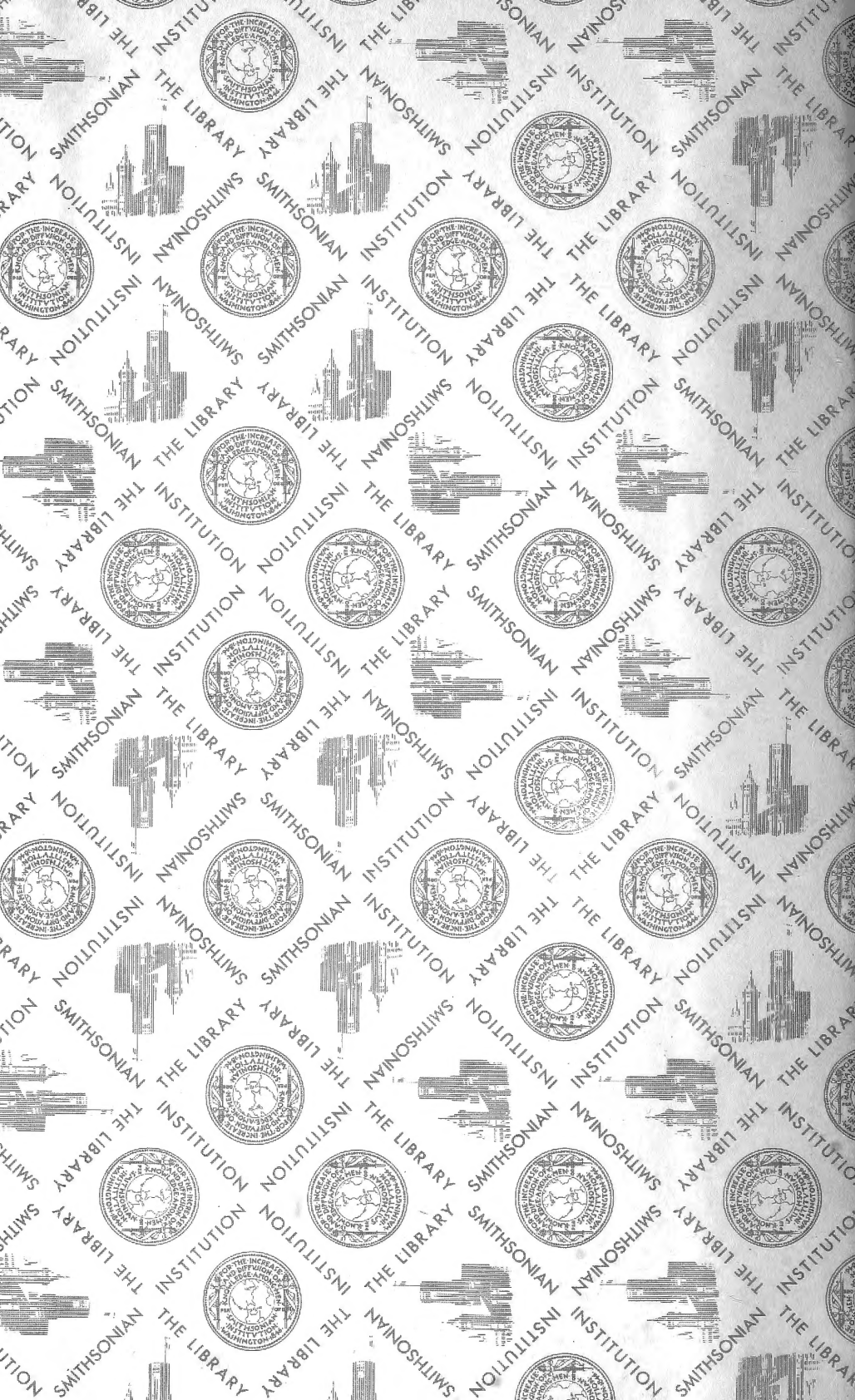
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TWENTY-SEVENTH ANNUAL REPORT

ON THE

NEW YORK STATE MUSEUM OF NATURAL HISTORY

BY THE

REGENTS OF THE UNIVERSITY

OF THE

STATE OF NEW YORK.

TRANSMITTED TO THE LEGISLATURE APRIL 16, 1874.

ALBANY:
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REGENTS OF THE UNIVERSITY.

[Ex officio Trustees of the State Museum of Natural History.]

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Director of the Museum.

JAMES HALL, LL.D.

Assistants in the Museum.

ROBERT P. WHITFIELD, IN GEOLOGY AND PALÆONTOLOGY.
J. A. LINTNER, GENERAL ASSISTANT.
JAMES W. HALL, IN ZOOLOGY.
CHARLES CALLAWAY, SPECIAL ASSISTANT.

Botanist.

CHARLES H. PECK.

STATE OF NEW YORK.

No. 102.

IN SENATE,

April 17, 1874.

TWENTY-SEVENTH ANNUAL REPORT

ON THE STATE MUSEUM OF NATURAL HISTORY BY THE REGENTS OF THE UNIVERSITY OF THE STATE OF NEW YORK.

UNIVERSITY OF THE STATE OF NEW YORK:
OFFICE OF THE REGENTS,
ALBANY, *April* 15, 1874.

To the Hon. JOHN C. ROBINSON,
President of the Senate:

SIR — I have the honor to transmit the Twenty-seventh Annual Report on the State Museum of Natural History, by the Regents of the University.

I remain, very respectfully,
Your obedient servant,
JOHN V. L. PRUYN,
Chancellor of the University.

REPORT.

To the Hon. the Legislature of the State of New York:

The Regents of the University respectfully report:

That the condition of the State Museum of Natural History and the work of the past year are exhibited in the reports of the Director and Botanist herewith communicated. They show a gratifying progress in investigations, additions and arrangement. The collections, as exhibiting the results of the geological survey of the State, have always been regarded as of great value, and this is largely increased by additions gathered from beyond its limits. The reports on the Museum are earnestly sought by students of science and investigators, both in this country and in Europe. The Regents ask that the same number of copies of this report be ordered printed as have been those of former years.

Respectfully submitted,

JOHN V. L. PRUYN,
Chancellor of the University.

REPORT ON THE STATE MUSEUM.

CONTENTS.

REPORT OF THE DIRECTOR.

ALBANY, *January*, 1874.

To the Honorable the Board of Regents of the University of the State of New York:

GENTLEMEN —

It becomes my duty to present to you the Annual Report upon the condition of the collections of the Museum of Natural History; the additions and donations thereto, and the work done in the institution during the past year.

The collections in the various departments are in good order, and to a large extent satisfactorily arranged; though we are greatly in want of space for the proper exhibition of the collections in some of the classes. The re-arrangement of the shelving and cases on the second floor, during the past year, has given to the collections in mineralogy, and to those of European and American post-palæozoic palæontology, better accommodation; and we have nothing to desire in that direction for the present. We need, however, greater space for the exhibition of New York *Palæozoic Fossils;* and likewise in the *Zoological* department, especially for the marine and fresh-water shells and other invertebrata.

I feel it my duty to again call your attention to the want of proper working rooms, as among the first requisites for a Museum of this kind. The requirement to distribute the materials of large collections of fossils and minerals among the educational institutions of the State involves the necessity of spacious working rooms, in order to perform the work properly and with any reasonable degreee of expedition.

Through the kindness of Mr. T. L. Harison, Secretary of the State Agricultural Society, we have been permitted to occupy

the Agricultural Hall for that purpose. This room, however, is frequently needed by the Agricultural Society, or for other public uses, and we can only occupy it subject to removal on notice. This is attended with many inconveniences, and prevents systematic working, as we must always be prepared for removal of material and every thing connected with the work.

I beg, therefore, to repeat, what I have often said before, that the want of proper working rooms is a serious embarrassment in the general and special work of the Museum; and is really the cause of great hindrance, or the absolute prevention of work that ought to be done. I must, therefore, earnestly call your attention to this deficiency.

A list in detail of the additions and their source, in each one of the departments of the Museum, will be found appended to this report.

Additions to the Museum by Donation.

To the Zoölogical Department, donations are recorded from eighteen individuals and institutions, of above 1,200 specimens.

To the Botanical Department, donations have been received from thirty persons.

To the Geological, Palæontological and Mineralogical Department, eighteen persons have made donations.

To the Archæological and Ethnological Department, we have donations from four persons.

To the Library, seventeen individuals and societies have made donations, and two contributions have been received in exchange; adding to the library forty-one pamphlets and twenty-one bound volumes.

The whole number of contributors to the several departments during the year, as above given, is eighty-seven.

To the liberality of Hon. Thomas W. Olcott, the Museum is indebted for the jaw, several vertebræ, ribs, and other bones of a whale (*Balænoptera* —— *?*) These bones were discovered many years since at Balize, below New Orleans, and purchased by a gentleman then residing in Albany, in the belief that they were fossil. During the last summer, the owner being about to remove them from Albany, where they had long remained in the Museum of the Medical College, they were purchased

by Mr. Olcott and presented to the State Museum of Natural History.*

Mrs. E. Emmons has presented to the Museum a miscellaneous collection of fossil and recent bones and other materials, nearly all of which have been put in proper condition, and in part arranged in place in the Museum.

Additions by Purchase.

The Museum has purchased of Prof. H. A. Ward, of Rochester, three fine skins of Buffalo, a bull, cow and calf. From Mr. Wallace, of New York, the Museum has purchased two skins of shark, *Carcharias cæruleus* De Kay, and one ray, *Pastinaca hastata* De Kay.

General Work of the Museum.

During the past year the assistants in the museum have been faithfully engaged in the work allotted to them.

In Geology and Palæontology, Mr. R. P. Whitfield has been chiefly occupied in the preparation of fossils for arrangement in the museum, the labelling and distribution of duplicate fossils into sets for the educational institutions, with a short period of field work.

Mr. Lintner has been engaged in collecting and arranging, numbering and recording the various collections of shells which have been received at the Museum during many past years, and also incidental miscellaneous work in the Museum.

Mr. C. E. Hall was for some time engaged in mounting the antlered skulls, the stuffed fishes, preparing skulls and parts of skeletons for special study, with general miscellaneous

* This jaw has been reported to us as the specimen mentioned by Dr. De Kay in the Natural History of New York, Zoölogy, Part I, page 131; but it is not probable that it is the same,—it is larger by measurement, a considerable part of the skull is wanting, and other bones which accompany our specimen are not alluded to by Dr. De Kay. The reference is as follows :

"*Rorqualis australis.* In 1837, the skull of a large whale was exhibited in New York, under the imposing name of 'Fossil Head of the Sea Serpent.' It was reported to have been dug up near Balize, Louisiana, and was in the condition of a grave-yard bone. It had been probably stranded, and subsequently covered by the rapidly forming sediment of the Mississippi. The lower jaw was wanting. The skull, with the upper jaw, was perfect, and measured fifteen feet. After a careful examination and comparison, it was identified with the *Rorqualis australis*, or *Balænoptera* of the Cape of Good Hope, described and figured by Cuvier. (Oss. Foss., vol. 5, part 1, p. 370, pl. 26, figs. 1, 2, 3, 4.) A reduced figure from a larger one taken on the spot will be found on plate 33, fig. 4."

duties of the museum. During the months of July and August he was chiefly engaged in making collections for the Museum; a portion of which have been arranged in their proper relations. The alcoholic collections remained undistributed, for want of proper jars for containing them, at the time he left the Museum in October.

Mr. Peck has during the past year, as heretofore, devoted his time entirely to botany, and the results are equally important and satisfactory as in former years.

With the assent of the Board of Regents, Mr. C. Callaway has been employed as a special assistant for the past year. He was at first engaged in the cleaning, assorting and rearrangement of the minerals. Under a provision in the supply bill of last year, Mr. Callaway has since, as for some time previous, been occupied in cleaning, preparing and labeling the duplicate specimens from the Gebhard collection, and, lately, of those collected for the Museum, and for the Palæontology of the State by the assistants.

Disposition of Material.

In the entrance hall, on the right of the door, a vertical case has been made for the reception of thirty specimens of granite, representing the stone used in the construction of the dry-dock at Brooklyn, and presented by Hon. Wm. J. McAlpine, the engineer of that work. These blocks have for several years occupied a place among miscellaneous collections in the Curator's room, but are now appropriately arranged with the economic collection.

On the first floor of the Museum, the following additions have been made: Eighty-six species of carboniferous fossils from the Western States; several species of Upper Helderberg corals; two slabs of Oriskany sandstone with *Rensselæria ovoides;* two slabs of Schoharie Grit with orthoceratites; one slab of Hamilton shale with *Spirifera mucronatus;* one slab of Hamilton Lamellibranchiate shells; with several miscellaneous specimens.

From the Chemung group is one mass composed mainly of *Spirifera Verneuili;* also one large slab, with numerous characteristic fossils, from a thin gray layer in the midst of red rocks of shale and shaly sandstone previously supposed to be of the Cats-

kill group, and one hundred and fifty feet above the beds of gray and olive shales and sandstones, heretofore regarded as limiting the Chemung group proper. From the position in which the stratum occurs this slab is very interesting, carrying, as it does, an assemblage of Chemung fossils rarely met with, in like association, in typical localities of the group. Numerous other specimens have been collected from the same stratum, and will go into their proper places in the Museum. Such collections have an interest beyond their character simply as fossils, and they merit especial care in their preservation.*

It is a serious misfortune that our Museum has not space to admit of the arrangement of collections illustrating sections of formations; that is, collections of specimens of the rocks and fossils from numerous points, both in the midst of formations, and also at their junction, which shall illustrate the physical and biological changes and conditions at successive stages of the deposition. No geological or palæontological collection will ever be complete, or afford full measure of instruction, till such collections shall be made and carefully preserved.

A large number of specimens, 2,413, some of them slabs covered with smaller fossils, of the Lower Helderberg group and Oriskany sandstone,† have been arranged in the drawers beneath the cases representing these formations. This disposition is necessary because we have no cases for their exhibition.

The geological collections from the Niagara group to the Lower Pentamerus inclusive, have been re-arranged in the new alcove cases. The collections of the lower rocks to the Hudson river group and Medina sandstone, have been cleaned and re-arranged upon the shelves.

Many large and important specimens remain ready for arrangement with the geological and palæontological collec-

* These specimens present a beautiful illustration of the recurrence of previous conditions of deposition after a long interval, — conditions existing through many hundreds of feet of sedimentary accumulations with organic forms, but which had ceased, and, other influences supervening, had accumulated a great mass of non-fossiliferous red shales and sandstones, belonging really to a different geological era. These facts, moreover, illustrate the impossibility of drawing any strict lines of demarkation between different groups as represented by sedimentary strata. The simple explanation is, that, owing to oscillation of the sea-bed, the shore-line was advanced, and the encroachment of littoral deposits either destroyed or pushed far seaward the then existing organisms, which again, after an interval, returned to the same areas, by the recession of the shore-line or sinking of the ocean-bed.

† Of the Lower Helderberg, 1,976 specimens, and, of the Oriskany sandstone, 437 specimens.

tions; but we are deterred from thus placing them, partly for want of room, and also because some doubt has been expressed in regard to the strength of the building to support a greater weight than we now have within its walls. Upon this point I do not wish to express any opinion; but in view of the large collections ready to be placed in the building, and the necessary constant increase of collections, I think the opinion of a competent architect, or the builder of this structure, should be obtained, in order to proper action in the disposition of our collections.

On the second floor of the Museum, the collection of New York minerals has been thoroughly cleaned; the best specimens have been selected and arranged; and the poorer specimens laid aside as duplicates.

The Brazilian minerals have been cleaned and re-arranged. A greatly increased space has been allotted to a *general collection* of minerals; and many specimens from the New York duplicate collections, and from the miscellaneous collections of the Museum, have been arranged upon the shelves of the wall-cases on the south and west sides of the room.

The entire series of shelves in the wall-cases of the second floor have been reconstructed for the better arrangement and display of the minerals, and a portion of the west end has been reserved for the exhibition of ores and other economical products of the State. Some progress has already been made in this direction, and 130 specimens, the products of the iron mines of northern New York, and their associated rocks and minerals, have been placed in this case.

The Emmons collection of crystals, which had occupied some table cases in the Agricultural Museum, has been transferred to this room; so that, now, all the mineral collections are associated on the same floor of the Museum. It is to be hoped that this collection may soon become the property of the Museum, and be incorporated in the New York and general collections of minerals.

The series of British fossils has been revised and re-labeled. Thirty-five British and five continental European species have been added to the collections, and placed in the table cases. The fossils of the Eocene, Paris Basin, those of the cretaceous, from Mount Lebanon, Syria, and the American Mesozoic and

Tertiary formations, have been re-arranged and some of them re-labeled.

A cast of a skull of a fossil Rhinoceros, presented by Sir Antonio Brady, of London, has been placed in proper position on this floor.

Some specimens of fossil bones of Mastodon and other subjects, derived from the collection presented by Mrs. E. Emmons, have been duly recorded and placed in one of the table cases; also, some separate scutes of the Glyptodon (*Schistopleurum*), received in a collection from Mr. Thomas Moore, of the Liverpool Free Museum.

On the third floor of the Museum, the Zoölogical collection has been increased by the addition of three fine specimens of the Buffalo; a large bull, a cow and a calf. These specimens are among the finest, if not superior to any, in the museums of the country.

A number of antlered skulls, for sometime in the Museum without a proper place, have been tastefully mounted on shields and placed on the walls. Those of the Elk (*Cervus Canadensis* Harl.), Deer (*Cervus Virginianus* Harl.), and Caribou (*Rangifer Caribou* Aud.-Bach.), are conspicuously arranged over the staircase; and above and between the windows are placed those of the Moose (*Cervus alces* Linn.), Black-tailed Deer (*Cervus macrotis* Say) Antelope (*Antilocapra Americana* Ord.), Mountain Sheep (*Ovis montana* Cuv.), Ibex (*Capra ibex*), etc. In this manner space is utilized which could not be used for cases.

In the first wall-case, at the head of the stairs, have been arranged the skeletons of Fishes; also, the stuffed skins of Fishes, which have been removed from the case they formerly occupied, and mounted on black wooden tablets,—no longer presenting an unattractive appearance.

In the second wall-case have been placed the skeletons of Birds and Reptiles, and carapaces of Turtles.

The third wall-case is occupied by the skeletons and skulls of Mammalia and Reptilia.

A number of additions have been made to this part of the collection; these are recorded in their proper places. The most notable of these are a series of casts of skulls of Gorilla, male and female; Orang, male and female, Chimpanzee.

male and female. These have been received from Mr. Thomas Moore, of the Derby Free Museum of Liverpool, Eng., in return for objects sent him by J. W. and C. E. Hall, and by them presented to the museum.

The aquarium, formerly occupying the space between the third wall-case and the Archæological collections, has been removed to the basement of the building, and the space fully utilized by occupying it with the skeletons of Elk, Moose and Buffalo; which, however, are scarcely well accommodated in this position.

Having no space on this floor for the jaw and other bones of the Whale in their proper zoölogical relations, we have mounted them over the doorway in the entrance hall of the Museum, as being the only available space at present at our disposal. The jaw, as it now stands, measures 17 ft. 4½ inches; with the missing parts of the skull it would measure over eighteen feet.

Some additions have been made to the New York Invertebrata. From the material collected during the past year by Mr. C. E. Hall, (a very small portion of which has yet been prepared for exhibition), there have been added to the Crustacea a fine series of *Limulus Polyphemus* at different stages of growth, and a dissection of a large individual of the same.

The Insecta are represented in the arrangement of one hundred and thirty-three trays, containing specimens of the earlier stages of insects, — eggs, larvæ, and pupæ, together with cocoons, galls, and various parasites. A list of these additions will be found under the proper head in this report.

The Molluscan Collections.

At the time of the receipt of the Gould collection of Mollusca, in 1863, two of the boxes labeled as containing *Type specimens* were set aside and left unopened, as there was no suitable place for their reception. For convenience of refer ence, it was thought better to keep these distinct from the main collection; and as a measure of prudence, on account of their value as types, that they should not be exposed to the depredations with which our cases, although guarded by locks and screws, have repeatedly been visited.

During the past year, these boxes have been unpacked; and the specimens, with about fifty other species (taken

from the arranged collection), have been marked, catalogued and placed in a table case in the director's room, where they are conveniently arranged for reference and comparison.

In the catalogues received with this collection, twenty-seven species are recorded as types, which Mr. Lintner reports as not to be found in the collection. These are enumerated below. *

In addition to the Gould collection, containing 6,000 species and about 60,000 specimens, other collections of marine, land and fresh-water shells have been received at the Museum from various sources and at different periods, from its organization to the present time. These are now incorporated in the general collection, and are enumerated as follows:

1. From H. C. DeRham, New York, one hundred and fifty-nine species, mostly marine. Third Annual Report on the State Cabinet, pp. 41–46.

2. From Dr. Charles Martin, U. S. Navy, two hundred and fifty-one marine species. Catalogued in the 7th Annual Report on the State Cabinet, pp. 29–39.

3. From Dr. James Lewis, of Mohawk, N. Y., fifty-eight species of land and fresh-water shells, mainly of the State of New York. Catalogued in the 7th Annual Report, pp. 39–41.

4. From Dr. Chester Dewey, of Rochester, N. Y., forty-three species of Unio, from New York and Ohio, including a large number of varieties. Ninth Annual Report on State Cabinet, pp. 31–38.

5. From Dr. Wesley Newcomb, two hundred and seventeen species, land, fresh-water and marine (including a very fine

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A. 1167 Achatinella microstoma.
A. 1168 " fuliginosa.
A. 1197 " radiata.
A. 1471 " rubens.
A. 1475 " micratoma [?].
A. 1783 Olivella petiolita.
G. 2199 Psammobia miniata.
G. 2419 Polydonta gloriosum.
G. 2425 Ennea ringens.
G. 2448 Volvarina puella.
G. 2452 Monilea nana.
G. 2501 Theora lubrica.
G. 2519 Terebratella miniata.
G. 2522 Venus (Mercenaria) Stimpsonia.
G. 2534 Teredo thoracites.
G. 2583 Melania silicula.
G. 2584 " bulbosa.
G. 2699 Marginella (Gibberula) lachrimula.
A. 2821 Natica pusilla.
A. 3485 Planaxis lineolatus.
A. 3540 Turbo aculeus.
A. 4276 Tornatina cerealis.
A. 6123 Margarita argentata.
A. 6127 Lacuna neritoidea.
A. 6258 Bulimus interstinctus.
A. 6517 Hipponix testilis.
A. 2968 Lottia (Acmæa) paleacea.

series of Achatinella). Catalogued under 211 numbers, in 11th Annual Report, pp. 37–42.

6. From Hugh Cuming, Esq., of England, one hundred and forty species of land and marine shells, represented by one hundred and ninety-five specimens. Catalogued in 12th Annual Report on State Cabinet, pp. 105–107.

7. From Philip P. Carpenter, Warrington, England, three hundred and twenty-one species, principally marine, represented by 2,561 examples. Twelfth Annual Report, pp. 102–104. This catalogue unfortunately abounds in typographical errors.

8. From Philip P. Carpenter, a collection of Mazatlan mollusca; being the first duplicate of the Reigen collection of Mazatlan mollusca in the British Museum; containing four hundred and twenty-one species, represented by 6,584 examples, mounted on 2,285 glass tablets and in 367 test tubes. Catalogued in 13th Annual Report, pp. 21–36. *

9. From John G. Anthony, two hundred and seventy-nine species of fresh-water shells. Catalogued in 15th Annual Report, pp. 15–21.

10. From the Smithsonian Institution, two hundred and seventy-three species, from duplicates of the United States Exploring Expedition. Fifteenth Annual Report, pp. 23–25.

11. From the Smithsonian Institution (received in 1865), one thousand and sixty-eight species, represented by 1680 examples. Twentieth Annual Report (Revised edition), pp. 21–44.

12. From the Smithsonian Institution (received in 1866), six hundred and sixty-three species, and fifty-one varieties, represented by 1206 individuals. Catalogued in 20th Annual Report (Revised edition), pp. 45–60.

13. From Temple Prime, New York, a suite of one hundred and twenty-one species of Long Island mollusca. Twenty-fifth Annual Report, pp. 35–38, and 26th Annual Report, pp. 17, 18.

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* This catalogue includes a number of species not contained in the above collection; it enumerates all the species of the original collection in the British Museum. A correct catalogue has been prepared by Mr. Carpenter, by manuscript emendations, to a "List of the Reigen collection, as given in his *report on the Mollusca of the west coast of North America.*" London, 1867, pp. 243–264. A copy of the catalogue for the use of students, has been deposited with the collection in the Museum.

14. From the Smithsonian Institution, in 1869, a collection of European shells labeled by Mr. P. P. Carpenter, containing five hundred and fifty-six species. Twenty-fifth Annual Report, pp. 39–55.

15. From T. H. Aldrich, Selma, Ala., one hundred and thirteen species of United States fresh-water and land shells. Catalogued in the present report.

A large number of shells, principally marine, were contained in the Pickett and Gebhard collections which were purchased by the State. Several years ago (previous to 1866), Mr. W. H. Schram, of Sandlake, N. Y., contributed to the State Museum a collection of shells, which remained unacknowledged in our reports, and not unpacked until the past year, when the source from which they were derived was ascertained, and they are now duly credited.

A valuable donation of nearly a hundred species of Unio, with many duplicates, from Mrs. E. Emmons, has been received. A number of other contributions have been of special value, although consisting of comparatively few species.

The Gould collection is arranged separately; and the Regents have provided, that the Mazatlan collection "shall be kept distinct and open to the examination of students;" and the Director, appreciating the value of local investigations and collections, and in order to encourage them, has given his assurance that the suite of Long Island Mollusca shall also be maintained as a separate collection.

A series of the Mollusca of our own State, as full as our present material and knowledge permits, has been arranged in the table-cases of the New York Invertebrata.

A large number of land and fresh-water shells of the United States have accumulated in the Museum during the Geological Survey and in subsequent years; they have been brought together, cleaned and partially arranged in drawers. As a large proportion of them are not authentically named and without record of locality, it is proposed to submit them, during the present year, to the revision of Dr. James Lewis, of Mohawk, N. Y., whose acquaintance with these forms, from the study of them for many years, fully fits him for their determination, and reference to probable source. These materials will furnish a full suite for the Museum, and an

excess from which several valuable series can be supplied to our educational institutions, or retained for purposes of exchange.

Preliminary to the arrangement of the shells in one general collection, all the material which had been hitherto kept distinct was legibly marked with figures or letters referring it to its source when known. To insure more specific reference, all the specimens of species contained in numbered lists, published in our annual reports, have been marked with their ordinal number, and the number also placed on the accompanying label.*

The Lamellibranchiata have been temporarily arranged in the western division of the table-cases intended for the New York Invertebrata ; the Gasteropoda, etc., have been arranged in systematic order (with the exception of a few necessary diversions), in the drawers beneath the Mazatlan collection on its western side. †

Mr. Lintner reports that in the re-arrangement of the above

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*The Smithsonian shells, which are not marked with the catalogue number, are designated by 1 and S.; the Emmons contribution by 3 and Em.; the Schram contribution by 4; the Gebhard collection by 5; the Pickett collection by 6; the number 7 indicates seventy-five specimens of Uniones of unknown source, which were found in the basement of the building; A. indicates contributions from J. G. Anthony; W. N. from Dr. W. Newcomb; C. from Hugh Cuming.

† The following is the order of their arrangement, commencing at the upper drawers of the north end:

Range G: 1. Muricidæ, Pleurotomidæ; 2. Pleurotomidæ, Tritoniidæ, Buccinidæ; 3. Buccinidæ, Purpuridæ; 4. Purpuridæ, Olividæ; 5. Olividæ, Fasciolariidæ, Turbinellidæ; 6. Turbinellidæ, Volutidæ; 7. Argonautidæ, Loligidæ, Spirulidæ, Hyalidæ, Janthidæ, Muricidæ, and large shells of other families.

Range H: 1. Columbellidæ, Harpidæ, Cassididæ; 2. Doliidæ, Velutinidæ, Naticidæ; 3. Terebridæ, Scalaridæ, Pyramellidæ, Eulimidæ, Cerithiopsidæ, Solaridæ; 4. Conidæ; 5. Conidæ, Strombidæ; 6. Strombidæ; 7. Cypreidæ.

Range I: 1. Cypreidæ, Cancellariidæ, Cerithiidæ; 2. Cerithiidæ, Melaniidæ; 3. Melaniidæ, Littorinidæ; 4. Littorinidæ, Rissoidæ; 5. Paludinidæ, Valvatidæ, Ampullariidæ, Turritellidæ, Cecidæ, Vermetidæ, Onustidæ, Calyptreidæ; 6. Pileopsidæ, Neritidæ; 7. Neritidæ, Trochidæ.

Range J: 1. Trochidæ; 2. Trochidæ; 3. Haliotidæ; 4. Fissurellidæ, Dentaliidæ, Scutelliidæ, Patellidæ; 5. Patellidæ, Chitonidæ; 6. Tornatellidæ, Cylichnidæ, Bullidæ, Aplysidæ; 7. Helicidæ (Succininæ and Achatinæ).

Range K: 1. Helicidæ (Buliminæ); 2. Helicidæ (Pupinæ); 3 and 4. Helicidæ (Helicinæ); 5. Stenopidæ; 6. Auriculidæ, Limneidæ, Ampullaceridæ; 7. Siphonariidæ, Cyclophoridæ, Helicinidæ, Truncatellidæ.

Range L: In these drawers have been placed a collection from Mr. P. P. Carpenter (No. 7 in the list of collections), which, being mounted on glass tablets, have not for the present, been incorporated with the other collections.

Range A: (South end of eastern side); 2. Miscellaneous shells, unarranged and mostly unnamed.

collections, several trays were found in the drawers, in which were only the labels of missing shells. Five of these were among the Cuming collection; and as this consists of remarkably fine forms of rare East India, species, they have been in all probability, at some time, stolen from the drawers.* From eight other trays in one drawer, the shells were missing;† some of these may, perhaps, have been carelessly transferred to other trays containing the same species.

This condition of the shells was discovered by Mr. Whitfield in 1867, but at that time no careful comparisons could be made, owing to the pressure of other work and the want of proper facilities for arranging the collection.

It is quite evident that extensive and systematic depredations have been, and still continue to be, perpetrated on these collections; and with no better means of guarding against them than we have at present, such thefts must usually escape observation at the time, and, indeed, may never be detected, unless in the published record of species, note has also been made of the number of individual examples.

A comparison of the number of examples, now in the Museum, of the very valuable series of *Achatinella* presented in the year 1858 by Dr. Wesley Newcomb, with the number stated in the published catalogue, discloses the startling fact, that of the eighty-one species and varieties constituting the series, each represented by from two to twelve individuals, only *nine species* retain their original number. From the other seventy-two species and varieties, in sixty-one instances, one specimen has been taken; in eight instances, two specimens each; and from one species originally represented by twelve examples, three have been taken. A particular record of the above has been made in the Museum copy of the report containing the catalogue.

In addition to the loss of the specimens we have the humiliation of knowing that they have been appropriated by persons competent to discriminate between rare and common species —

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* The labels of these trays are as follows: *Conus amadis* Martyn; *Conus monile* Bruguière, Ceylon; *Conus nocturnus* Brug., Philippines; *Conus gubernator* Brug.; *Conus ermineus* Chemn, Philippines.

† These species are the following: *Conus mustelinus* Brug.; *Conus lithoglyphus* Brug.; *Conus litteratus*, Linn., Pacific; *Cypræa testudinaria* Linn., South Seas; *Cypræa pantherina* Solander, Persian Gulf; *Bulimus malleatus* Say, Fejees; *Bulimus fulguratus* Say, Fejees; *Oliva erythrostoma* Lam.

not amateurs, but connoisseurs, who hold the position and claim the rank of Naturalists.

To provide against a continuance of this evil is a subject commending itself to the consideration of the Regents.

Distribution of Duplicate Specimens.

This work, which was begun some years since with the imperfect material we then possessed, has been continued during the past year. The Gebhard collection of fossils, except those of the Coralline Limestone, has been unpacked, the specimens cleaned, ticketed and recorded. Of these, the Lower Helderberg and Oriskany specimens which were required for the Museum, have been placed in drawers, the remainder labeled with generic and specific names, and distributed among twenty duplicate collections. Of course, many of the species were only in sufficient number to fill from five to ten collections; while the more common and abundant forms extend throughout all of them. The number of species thus distributed is 95, represented (in the several collections) by 4,673 individuals.

The specimens of the Upper Helderberg and Hamilton Groups of the Gebhard collection, and of others previously belonging to the Museum, have been ticketed, with locality-number, and recorded. A considerable part of these have had labels of generic and specific names attached, and are ready for the duplicate collections.

The number of species from these Groups now ready for distribution, exclusive of the Lamellibranchiata, which are not yet ready, is about one hundred; which will be represented by at least 2,000 specimens.

In preparing for the distribution of the duplicate fossils of the Hamilton and Chemung Groups, twenty-five boxes of specimens, collected at different times, both for the Palæontology and for the Museum, after examination and selection of the specimens for illustration and description, have been sent from the working rooms at my residence, to the Museum, and their contents are now nearly ready for the collections.

The following transcription of the labels on these boxes is given below, as a record of the progress of the work, and of the disposition of material heretofore collected:

No. 1. R. P. Whitfield and G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 197, 198, 227–229.

No. 6. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 197, 198, 227–229.

No. 7. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 200, 201.

No. 10. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda (many *Chonetes*). Localities, 237, 238, 240.

No. 11. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda (many *Chonetes*). Localities, 230, 233–235, 237.

No. 15. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda (many *Leiorhynchus*). Localities, 240, 242.

No. 18. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 247–250.

No. 20. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 251, 252.

No. 22. G. B. Simpson, Coll. 1863:
Hamilton Group, Brachiopoda. Localities, 228, 230–232, 236, 253, 256.

No. 30. C. Vandeloo, Coll. 1863:
Chemung Group, Brachiopoda (*Streptorhynchus*). Locality, 224.

No. 33. W. M. Gabb, Coll. 1857:
Hamilton Group Fossils. Localities, Schoharie county, 35, 39, 46, 48, etc.

No. 48.
Hamilton Group, *Tropidoleptus*. Localities, various; some 196.

No. 49. C. A. White and others, Coll. 1860:
Hamilton Group, *Chonetes*. Western New York.

No. 53. Repacked, March, 1862:
Hamilton Group, *Chonetes deflecta*. Localities, 96–101.

No. 64. C. Vandeloo, Coll. 1862:
Corniferous Limestone, Brachiopoda. Locality, 185 (Clarksville).

No. 67. C. Vandeloo, Coll. 1863:
Chemung Group, *Athyris*. Entire Coll. of 1863.

No. 76. H. H. Smith, Coll. 1871:
Hamilton Group, *Strophodonta perplana*. Cayuga Lake. Localities, 428–449, 462–468.

No. 77. H. H. Smith, Coll. 1871:
Hamilton Group, *Spirifera medialis*. Cayuga Lake. Localities, 428–449, 462–468.

No. 78. H. H. Smith, Coll. 1871:
Hamilton Group, *Atrypa reticularis*. Cayuga Lake. Localities, 428–449, 462–468.

No. 80. H. H. Smith, Coll. 1871:
Hamilton Group, *Strophodonta texilis*. Cayuga Lake. Localities, 428–449, 462–468.

No. 81. H. H. Smith, Coll. 1871:
Hamilton Group, *Spirifera mucronatus*. Cayuga Lake. Localities, 428–449, 462–468.

No. 82. H. H. Smith, Coll. 1871:
Hamilton Group, *Athyris spiriferoides*. Cayuga Lake. Localities, 428–449, 462–468.

No. 83. H. H. Smith, Coll. 1871:
Hamilton Group, *Leiorhynchus*, on slabs. Cayuga Lake. Localities, 428–449, 462–468.

No. 85. H. H. Smith, Coll. 1871:
Hamilton Group, *Spirifera granulifera*. Cayuga Lake. Localities, 428–449, 462–468.

No. 86. H. H. Smith, Coll. 1871:
Hamilton Group, *Orthis Vanuxemi*, principally on slabs Cayuga Lake. Localities, 428–449, 462–468.

Field Work and Collections.

A special report will be presented by Mr. Peck, on the collections made by himself in the Botanical department of the Museum.

In the Zoölogical department, Mr. C. E. Hall has made considerable collections from the Islands of Buzzard's Bay.

In Geological collections, Mr. H. H. Smith has been employed for a short time in Onondaga county, more particularly among certain beds of the Hamilton Group, containing remains of Fishes and Crustacea.

Mr. G. B. Simpson has likewise been employed for a month in making collections from the Clinton and Hamilton Groups. Mr. Whitfield has been engaged in field collections from the Niagara and Hudson River Groups.

Eighteen boxes of specimens of ores and minerals from the iron region of northern New York were collected in the month of October last by J. W. Hall. This collection was made at my own expense. It represents the products of that region in very fine series; and I would propose to the Board of Regents that the State Museum should receive half the specimens and assume half the expense.

Mr. Andrew Sherwood, with the assistance of his brother, has continued the investigations of the Chemung Group and Catskill Mountain formations, making, at the same time, extensive collections of fossils, several boxes of which have been sent in during the past season. The completion of this specific work, which may be expected by the end of 1874, will result in a more complete and satisfactory determination of the limits of the formations in the southern and south-eastern counties of the State. By adopting this system of working, we have not only increased, and to a great degree perfected, the collection of fossils required for the Museum, but we have had the limits of the formations accurately traced, and with comparatively little addition to the expense.

It is quite true that a similar system of work should be instituted in other parts of the State; and especially in the older geological formations, in which our Museum collections are very meagre. This would increase our collections, rectify the limits of formations formerly mapped incorrectly for want of time for field work, and serve to keep up the prestige of the State in geological investigations.

I am very respectfully,

Your obedient servant,

JAMES HALL,

Director.

ADDITIONS TO THE STATE MUSEUM

DURING THE YEAR 1873.

I. ZOOLOGICAL.

Twenty examples of *Limnæa gracilis* Say, collected at Buffalo, N. Y. From the BUFFALO SOCIETY OF NATURAL SCIENCES.

Menobranchus lateralis Harl., from the Hudson river. From MONROE HANEY, Albany.

Sixty-nine specimens of Lepidoptera (62 Butterflies, 4 Bombycidæ and 3 Noctuidæ), from the west coast of Florida. From W. NEWCOMB, M. D., Cornell University, Ithaca, N. Y. The species as follows:

Papilio Troilus Linn.
Papilio Palamedes Drury.
Papilio Cresphontes Cram.
Papilio Ajax Linn.
Pieris Monuste Linn.
Callidryas Eubule (Linn.).
Terias Nicippe (Cram.).
Terias lisa (Boisd.-Lec.).
Heliconia charitonia (Linn.).
Danais Plexippus (Linn.).
Danais Berenice (Cram.).
Agraulis vanillæ (Linn.).
Melitæa Phaon (Edw.).
Melitæa ———, sp.
Pyrameis Atalanta (Linn.).
Apatura celtis (Boisd.-Lec.).
Thecla Melinus (Hübn.).
Lycæna filenus Poey.
Thymele Proteus (Linn.).
Eudamus Tityrus (Fabr.).
Nisoniades Persius Scudd.
Nisoniades Brizo (Boisd.-Lec.).
Nisoniades Juvenalis (Fabr.)
Utetheisa ornatrix (Linn.).
Leucania ———, sp.
Two undetermined noctuas.

Corydalis cornuta (Linn.). From Mrs. A. L. PARCELL, Oneonta, N. Y.

A Hair-snake (*Gordius* ———, sp.). From VERPLANCK COLVIN, Albany, N. Y.

Two Night-hawks (*Chordeiles popetue* Baird). From JOHN BRATT, West Point, N. Y.

Two eggs, of the first sixteen laid by a very large bramah hen, showing the range of size; the smallest (round in shape), .65 inch in diameter, the largest, .8 inch and 1 inch in its diameters. From D. F. N. PARKER, Versailles, N. Y.

Palatal bone of ———. From E. LABISCHINER, Albany. N. Y.

Whip sting-Ray (*Pastinaca hastata* De Kay), and two small blue Sharks (*Carcharias cæruleus* De Kay). Purchased.

Part of the skull and upper jaw of a Whale (*Balænoptera*, ——— *sp.*), with five vertebræ (two of which are imperfect), two ribs and a fragment of a third, right humerus and radius; also, a vertebra, probably of another individual. Balize, Louisiana. From THOMAS W. OLCOTT, Albany, N. Y.

Section of cedar trunk burrowed by ants. Hair-ball from stomach of a hog. From MOSES EAMES, Watertown, N. Y.

Three mounted Buffaloes (*Bos Americanus* Gmel.), bull, cow and calf. Skeleton of a bull Buffalo. Purchased.

Carapace of Armadillo, from "west coast of Africa." From ROBERT BROOKHOUSE, Salem, Mass. (Contributed to the State Cabinet prior to 1866, but not hitherto recorded.)

Parasite on brook-trout (*Salmo fontinalis*), from Moose river, N. Y. From VERPLANCK COLVIN, Albany, N. Y.

Two skulls of black bear (*Ursus Americanus* Pall.). Nos. 41, 42. Skeleton (imperfect) of an Alligator (*Crocodilus lucius*). No. 65, E. I.

Vertebræ of a seal. No. 65, E. II.

Whale cap. No. 65, E. III.

Miscellaneous recent bones, thirty or forty specimens. No. 65, E. IV.

Tertiary (North Carolina?) fossil bones. No. 65, E. V.

Mastodon remains from the locality of the Warren Mastodon, Orange county, N. Y.; two sternal bones, five foot bones, four vertebræ, two ribs. No. 65, E. VI.

Five sternal bones of Elephant or Mastodon. No. 65, E. VII.

Four bones, undetermined. No. 65, E. VIII.

Bones from marl beds, Cape Fear river, N. C.; Zeuglodon (?) vertebræ from eastern part of North Carolina; twenty-three specimens of ribs, vertebræ, etc. No. 65, E. IX.

Skull of Alligator. No. 65, E. X.

Skin of Alligator. No. 65, E. XI.

One hundred and fifty-eight specimens of Uniones of about ninety-five species; and eighty odd valves of Uniones. A number of specimens of Donax, etc. From Mrs. E. Emmons, Albany, N. Y.

Five examples of *Pomatropsis Brownii* Carpenter, collected at Cunliff Pond, Cranston, R. I. From W. O. Brown, of the Providence Franklin Society.

Six hundred and four specimens of marine and fresh-water shells, from Wm. H. Schram, Sandlake, N. Y. Received previous to 1866, but not credited.

One hundred and eighteen species of U. S. fresh-water and land shells (mainly from New York and Alabama). From Truman H. Aldrich, Selma, Ala.

Fourteen species of U. S. Helices, received through Dr. S. B. Woolworth, in 1867, in exchange for State Cabinet Reports, from E. S. Hubbard, of Tottenville, Staten Island, N. Y., as follows:

Helix	*Jacksoni* Bland.....	Fort Gibson, Ind. Terr..	4
H.	*leporina* Gould.....	Fort Gibson, Ind. Terr..	3
H.	*Dorfeuilliana* Lea.....	Fort Gibson, Ind. Terr..	5
H.	*costata* Müll.....	Fort Gibson, Ind. Terr..	10
H.	*Postelliana* Bland.....	Baldwin, Florida.....	4
H.	*volvoxis* Parr.....	Jacksonville, Florida....	10
H.	*pustula* Fer.....	Jacksonville, Florida....	5
H.	*septemvolva* Say.....	Enterprise, Florida.....	4
H.	*auriculata* Say.....	Fort George Isl., Florida.	4
H.	*interna* Say.....	Chattanooga, Tenn.....	5
H.	*spinosa* Say.....	Chattanooga, Tenn.....	2
H.	*Hopetonensis* Shutt....	Charleston, S. C.....	4
H.	*crinoidea* Anth.....	Charleston, S. C.....	2
H.	*labyrinthica* Say.....	Staten Island, N. Y.....	50

Tooth of sperm whale (*Physeter macrocephalus*); painted tortoise (*Emys picta*); carapace of snapping-turtle (*Chelydra serpentina* Schw.); jaws of frog-fish (*Lophius piscator* Mitch.). From Gebhard Collection.

Tusk of wild-boar (*Sus scrofa* Linn.), from Guntoor, India. From Simms' Collection.

Cast of Skull of Great Orang (*Simia Satyrus* Linn.). Adult male.

Cast of Skull of Great Orang (*Simia Satyrus* Linn.). Adult female.

Cast of Skull of Small Orang (*Simia morio* Owen). Adult male.

Cast of Skull of Small Orang (*Simia morio* Owen). Adult female. (The above four casts are from specimens collected in Borneo by Mr. A. R. Wallace, in 1856.)

Two casts of Skulls of large Gorilla (*Troglodytes gorilla*). Adult male, from the Gaboon. From a specimen in the Liverpool Free Public Museum.

Casts of Dodo bones.

Two examples of *Euplectella aspergillum* Owen, and a descriptive pamphlet.

Glass-rope coral (Hyalonema).

Twenty detached scutes of Glyptodon.

Cast of a specimen of *Paradoxides Harlani*, from the "Trilobite beds" at Braintree, Mass.

Cast of Footprint of the Iguanodon, from a specimen in Dr. Mantell's Collection. From J. W. HALL and C. E. HALL, through Prof. JAMES HALL.

A Crab (*Cancer pagurus* Linn.) from Hastings, England. From Mrs. ANNA BALLARD, Albany, N. Y.

Fifty-eight objects illustrative of the Insecta — their several stages, their architecture, etc., from J. A. LINTNER, N. Y. State Museum; as follows:

Ova.

Anisota senatoria (*Sm.-Abb.*).
Callosamia Promethea (*Drury*).
Eacles imperialis (*Drury*).
Hemileuca Maia (*Drury*).
Clisiocampa Americana (*Fabr.*).
Smerinthus geminatus *Say.*
Stylopyga orientalis (*Linn.*) *Scudd.*
Epeira ——— ?

Larvæ.

Papilio Turnus *Linn.*
Papilio Troilus *Linn.*
Papilio Asterias *Fabr.*
Grapta interrogationis (*Fabr.*).
Vanessa Milbertii *Godart.*
Danais Plexippus (*Linn.*).
Nisoniades Lucilius *Lintn.*
Eudryas unio *Hübn.*
Thyreus Abbotii *Swains.*
Ceratomia Amyntor *Hübn.*
Halesidota Caryæ (*Harris*).
Orgyia leucostigma (*Sm.-Abb.*).
Parorgyia parallela *Gr.-Rob.*
Limacodes querceti *H.-S.*
Empretia stimulea *Clem.*
Telea Polyphemus (*Linn.*).
Actias Luna (*Linn.*).
Tolype laricis (*Fitch*).
Tolype velleda *Stoll.*
Anisota stigma (*Sm.-Abb.*).
Xyleutes robiniæ (*Peck*).
Acronycta oblinita (*Sm.-Abb.*).
Acronycta hastulifera *Guen.*
Anomia xylina *Say.*
Cucullia asteroides *Guen.*

Pupæ.

Papilio Turnus *Linn.*
Pieris oleracea (*Harr.*).
Pieris rapæ (*Linn.*).
Grapta interrogationis (*Fabr.*).
Limenitis ursula (*Fabr.*).
Eudamus Tityrus (*Fabr.*).
Thecla Irus (*Godart*).
Sesia Buffaloensis *Gr.-Rob.*
Darapsa Myron (*Cramer*).
Philampelus Pandorus (*Hübn.*).
Smerinthus geminatus *Say.*
Ceratomia Amyntor (*Hübn.*).
Macrosila quinquemaculata(*Steph.*)
Sphinx kalmiæ *Sm.-Abb.*
Ellema Harrisii *Clem.*
Eudryas grata (*Fabr.*).
Eudryas unio *Hübn.*
Samia Cecropia (*Linn.*).
Telea Polyphemus (*Linn.*).
Callosamia Promethea (*Drury*).
Anisota senatoria (*Sm.-Abb.*).
Actias Luna (*Linn.*).
Hyperchiria Io (*Fabr.*).
Hemileuca Maia (*Drury*).
Ichthyura inclusa *Hübn.*
Euchætes egle (*Drury*).
Gastrophilus equi (*Fabr.*) — The horse bot-fly.

Cocoons.

Euchætes egle (*Drury*).
Lagoa crispata *Pack.*
Thyridopteryx ephemeræformis *St.*
Ichthyura inclusa *Hübn.*
Samia Cecropia (*Linn.*).
Samia Cecropia, inner cocoon.
Hyperchiria Io (*Fabr.*).
Tolype laricis (*Fitch*).

Telea Polyphemus (*Linn.*).
Actias Luna (*Linn.*).
Philosamia Cynthia (*Drury*).
Callosamia Promethea (*Drury*).
Myrmeleon ——— sp.
Chrysopa ——— sp.
Chrysopa ——— sp.
Nematus ventricosus *Klug.*

Parasites.

Pteromalus puparum.....	From pupa of Pieris rapæ.
?.....	" Vanassa Milbertii.
Microgaster limenitidos *Riley*...	" Limenitis Misippus.
Microgaster ——— sp.....	" Hemileuca Maia.
Microgaster ——— sp.....	" Darapsa Myron.
Microgaster ——— sp.....	" Sphinx kalmiæ.

Galls.

Grape leaf gall of Phylloxera vitifoliæ (*Fitch*).
Solidago gall of Trypeta solidaginis (*Fitch*).
Pine-cone willow gall of Cecidomia strobiloides *O.-S.*
Oak-bullet gall of Cynips quercus globulus *Fitch.*
Woolly oak gall of Cynips seminator *Harris.*

Arachnidæ.

Eight species undetermined.

II. BOTANICAL.

Piece of an Irish Buck-thorn with numerous excrescences upon it. From Wm. Dwyer, Albany, N. Y.

Maple-leaves of abnormal growth, Greenbush, N. Y. From Henry J. Kennedy, Greenbush.

Section of apple tree, showing the overgrowth of a graft; section of maple, showing the overgrowth of an auger-hole; piece of hickory, showing the overgrowth of a cutting; section of hickory with an imbedded bullet. From Moses Eames, Watertown, N. Y.

Specimens of *Evernia vulpina* Wulf. From Miss S. P. Monk, Santa Barbara, Cal.

Eight species of southern plants and ferns. *Evernia vulpina* from the "big trees" of California. From Miss E. F. Atwater, Chicago, Ill.

Thirty-five species of European algæ. From Miss M. L. WILSON, Buffalo, N. Y.

Specimens of *Aconitum napellus* L. From Rev. A. P. VAN GIESON, Poughkeepsie, N. Y.

Three rare species of flowering plants. From Rev. H. WEBBE, Poestenkill, N. Y.

Specimens of *Verbena bracteosa* Mx. From P. A. PUISSANT, Troy, N. Y.

Specimens of *Botrychium matricariæfolium* Braun. From E. HUNT, Utica, N. Y.

Specimens of *Botrychium lunaria* Swartz. From E. W. MUNDY, Syracuse, N. Y.

Botrychium lunaria Sw., and two species of flowering plants. From H. GILLMAN, Detroit, Mich.

Three species of flowering plants. From A. H. CURTISS, Liberty, Va.

Three species of fungi. From E. C. HOWE, M. D., Yonkers, N. Y.

Nine species of flowering plants; some of them new to the State. From H. W. YOUNG, Aquebogue, N. Y.

Specimens of a new fungus (*Protomyces Martindalei* Pk.). From J. C. MARTINDALE, Camden, N. J.

Specimens of five rare flowering plants and three ferns. From Prof. G. H. FRENCH, Irvington, Ill.

Forty-three species of fungi, including many European. From W. R. GERARD, Poughkeepsie, N. Y.

Seven species of plants, three of which are new to the State. From E. S. MILLER, Wading River, N. Y.

Specimens of *Uredo ledicola* Pk. From J. S. MERRIAM, New York city.

Specimens of *Æcidium Cressæ* D. C. From GEORGE VASEY, M. D., Washington, D. C.

Specimens of *Peridermium decolorans* Pk. From S. WATSON, Cambridge, Mass.

Three new species of fungi. From J. M. COULTER, Washington, D. C.

Five interesting species of fungi. From J. B. ELLIS, Newfield, N. J.

Two new fungi and the rare *Dothidea Grammæ*. From C. C. PARRY, M. D., Davenport, Iowa.

Twenty-six species of fungi, of which several are new. From C. C. FROST, Brattleboro, Vt.

Specimens of *Trichomanes radicans* Swartz. From R. P. WHITFIELD, Albany, N. Y.

Specimens of *Polygonum Hartwrightii* Gr. From E. L. HANKENSON, Newark, N. Y.

Four species of fungi, one of them new. From Hon. HORATIO SEYMOUR, Utica, N. Y.

Twenty-seven species of cryptogamic plants, of which seven are new. From Hon. G. W. CLINTON, Buffalo, N. Y.

One hundred and twenty-six species, principally fungi, new to the State Herbarium. By collection of the BOTANIST.

III. GEOLOGICAL, PALÆONTOLOGICAL AND MINERALOGICAL.

A twelve-inch cube of polished Encrinal Limestone (Lower Helderberg Group). From the HUDSON SHELL MARBLE WORKS, Hudson, N. Y. (No. 122.)

A block (12 x 9¾ x 9¾ inches) of Serpentine Marble, with five faces polished. From the VERD ANTIQUE MARBLE COMPANY, Saratoga, N. Y. (No. 123.)

A block of Serpentine Marble, about 11 x 9 x 6 inches, showing sand-rubbed and polished surfaces and rock-fracture. Gouverneur, N. Y. From DANIEL CHURCH. Received in 1871, but left unopened. (No. 157.)

Water-worn and weathered block of Limestone of the Quebec Group, from the Battenkill, Greenwich, N. Y. From ALEXANDER INGRAM, Greenwich, N. Y., per D. J. PRATT.

Three species (eighteen examples) of Cephalopoda, and six species (thirty examples) of Gasteropoda, from the Coal Measures of Edmonson Co., Ky.

Eight examples of Gasteropoda and fourteen of Corals, from the Falls of the Ohio. From SIDNEY S. LYON, Jeffersonville, Ind. (Received in Jan., 1869.)

Dictyophyton nodosum Hall (two examples), from the Chemung Group at Bath, Steuben Co., N. Y. From W. G. RICE, Albany.

Clay concretions. From DAVID DE LONG, Shutter's Corners, Schoharie Co., N. Y.

Encrinal Marble, from the Lower Helderberg Group. From J. H. GOULD, West Camp, N. Y.

Favosites Helderbergia Hall, from the Lower Helderberg Group, Helderberg Mountains. From ——— ?

Three examples of deep-sea dredgings, viz.:

1. Siftings containing large foraminifera, from off Sombrero, March 15, 1873, in 450 fathoms.
2. Siftings, with small foraminifera; Lat. 32° 13′ N., Long. 69° 50′ W., in 1820 fathoms.
3. Material from 3150 fathoms; Lat. 23° 23′ N., Long. 35° 10′ W. No life; calcareous matter almost absent. From Lieut. H. N. MOSELY, of H. M. ship Challenger.

Asbestos occurring at West Albany, N. Y. From HOWARD TREADWELL, Albany, N. Y.

A concretion containing sand interiorly, from Grayson Co., Texas. From H. G. LANDERO, Camden, N. Y.

Rock specimens from shaft and headings of Hoosic Tunnel. From D. A. BULKELY, Stone Hill Farm, Williamstown, Mass.

Mica slate, from near the Patroon's, Albany. From W. T MORROW, Albany.

Four fossils, viz.: Cardium ———— (Tertiary); Phacops ————; Spirifera ————; *Lucina* (*Paracylas*) *proavia*. From LIEUT. A. W. VOGDES, U. S. Infantry.

Calymene senaria, two species of Orthoceras, Bellerophon, and a few Brachiopods: From Trenton Limestone. Trochoceras, from the Niagara Group. Several species of fossils from Devonian and Tertiary rocks. A slab with bird-tracks.

Quarts, fluor-spar, calcareous spar, scapolite, zirconite, albite, and a few other minerals. From Mrs. E. EMMONS, Albany, N. Y.

Homalonotus De Kayi (Green), from the Hamilton Group. (Purchased.)

Ceratiocaris and fish-teeth, from Pratt's Falls, Onondaga Co., N. Y.

Fish-scale from the lowest fossiliferous beds of the Hamilton Group near Oran, Onondaga Co., N. Y. From H. H. SMITH.

Geodes of Quartz; Glyptocrinus and Pterotheca from Lower Silurian; Spiriferæ, Productæ and corals from Lower Carboniferous; Bellerophon (two species), Pleurotomaria and Plants from the Coal Measures; a few cretaceous and tertiary fossils from the South. From C. VEATCH, Keytesville, Mo. (In Museum Coll., No. 650 in orange labels.) In exchange.

Examples of *Eozoön Canadense*, from Chelmsford, Mass. From PROF. L. S. BURBANK, Woburn, Mass. In exchange.

Fossils from the Lower Helderberg group, and Oriskany Sandstone (2,236 specimens). From collections for State Museum.

Eighty-six specimens of ores and accompanying rocks from mines in Essex Co., N. Y., viz.: From Moriah Mine, eight spec.; from Fisher Hill Mine, twelve spec.; from Ticonderoga Plumbago Mine, ten spec.; from Barton Hill Mine, six spec.; from (Moriah) New Bed, eight spec.; from Champlain and Essex Co. Mine, fourteen spec.; from

Cheever Mine, eight spec.; from Crown Point Quartz and Feldspar shaft, seven spec.; from Cook shaft, eleven spec.; from Hammond Mine, two spec. From PROF. JAMES HALL.

A slab (10 x 30 inches) of a two-inch layer of gray sandstone with numerous Chemung fossils, taken from the midst of the red shales and sandstones of the Catskill Group, 150 feet above the Chemung fossiliferous beds. From Seeley Creek, 4 miles from Mansfield, Tioga Co., Pa. From collections for the State Museum by A. Sherwood.

A block of Sandstone of the Chemung group, containing numerous *Spirifera Verneuilii*. From Hull's Mill, Angelica, N. Y. From collections for State Museum.

IV. ARCHÆOLOGICAL.

Piece from the picket enclosure of Schenectady, built in the year 1662, and burned in 1690. Remains of the line were found in 1871 at a depth of five feet below the surface of the ground. From DANIEL VEDDER, Schenectady, N. Y.

A piece of white-swamp oak (*Quercus prinus* var. *bicolor* Willd.) used in the construction of a dock near the foot of Maiden Lane, Albany, in a good state of preservation, after a burial of ninety-six years at a depth of twelve feet. From HENRY FULLERTON, Albany.

Powder-horn, made by a wagon driver in Gen. Taylor's army during the Mexican war. From Capt. JOHN J. RIDER, Northampton, Mass.

Two shoe buckles, two knee buckles, two old hay-forks, a distaff of 1790, amputating knife and forceps (?) of ancient pattern; Map of the city of New York, showing comparative plans in 1729 and 1817. From MOSES EAMES, Watertown, N. Y.

V. TO THE LIBRARY.

SMITHSONIAN MISCELLANEOUS COLLECTIONS: 8vo.

Review of American Birds in the Museum of the Smithsonian Institution. By S. F. Baird, Washington: 1864.

Catalogue of the Orthoptera of North America. By Samuel H. Scudder. Washington: Oct., 1868.

Arrangement of the Families of Fishes, or classes Pisces, Marsipobranchii and Leptocardii. By Theodore Gill, M. D., Ph. D. Washington: Nov., 1872.

List of the Institutions, Libraries, Colleges and other establishments in the United States, in correspondence with the Smithsonian Institution. Washington: July, 1872.

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE: 4to.

Physical Observations in the Arctic Seas. By Elisha Kent Kane, M. D., U. S. N. Washington: 1859–1860.

Physical Observations in the Arctic Seas. By Isaac J. Hayes. Washington: June, 1867.

The Transatlantic Longitude, as determined by the Coast Survey Expedition of 1866. By Benjamin Apthorp Gould. Washington: 1869.

Problems of Rotary Motion presented by the Gyroscope, the Precession of the Equinoxes and the Pendulum. By Brevet Maj. Gen. J. G. Barnard. Washington: 1871.

Memoirs on the secular variations of the Elements of the Orbits of the Eight principal Planets. By John N. Stockwell, M. A. Washington: 1872.

On the Geology of Lower Louisiana and the Salt Deposit on Petite Anse Island. By Eugene W. Hilgard, Ph. D. Washington: June, 1872. pp. 34.

North American Oölogy. By Thomas M. Brewer, M. D. Part I. Washington: 1857. pp. 132.

The above eleven pamphlets, from the SMITHSONIAN INSTITUTION, Washington, D. C.

Thirteenth Annual Report of the Indiana State Board of Agriculture. Agriculture, Vol. I. Indianapolis: 1872.

Second Report of the Geological Survey of Indiana, made during the year 1870. By E. T. Cox, State Geologist. Indianapolis: 1871.

Fourteenth Annual Report of the Indiana State Board of Agriculture, including the report of Prof. E. T. Cox, State Geologist, for 1871 and 1872. Indianapolis: 1872.

Annual Report of the Indiana Horticultural Society: Proceedings of the Eleventh Annual Session held at Indianapolis, Jan. 2, 3 & 4, 1872. Indianapolis: 1872.
From T. L. HARISON, Secretary N. Y. State Agricultural Society.

Five volumes (in small quarto), of the Geological Survey of California, J. D. Whitney, State Geologist, viz:
Palæontology, Vol. I. Carboniferous and Jurassic Fossils, by F. B. Meek. Triassic and Cretaceous Fossils, by W. M. Gabb. Philadelphia: 1864.

Palæontology, Vol. II. Cretaceous and Tertiary Fossils, by W. M. Gabb. Philadelphia: 1869.

Geology, Vol. I. Report of Progress and Synopsis of the Field-work, from 1860 to 1864. Philadelphia: 1865.

Ornithology, Vol. I. Land Birds. Edited by S. F. Baird, from the manuscript and notes of J. G. Cooper. Philadelphia: 1870.

The Yosemite Guide-book: A description of the Yosemite Valley and the adjacent region of the Sierra Nevada, and of the Big Trees of California. Philadelphia: 1870. From J. D. WHITNEY, State Geologist.

The Annual Report of the Board of Regents of the University of Minnesota, for the year ending November, 1872. St. Paul: 1873. [Includes the first annual report of the Geological and Natural History Survey of Minnesota].

Constitution and By-laws of Minnesota Academy of Natural Sciences, with Address of President, List of Officers and Committees for 1873. Minneapolis: 1873. Pamph., 8vo., pp. 40. From Prof. N. H. WINCHELL, St. Anthony, Minn.

Report of the Commissioner of Agriculture for the year 1871. Washington: 1872. From the Commissioner, Hon. FREDERICK WATTS.

Report on a Topographical Survey of the Adirondack Wilderness of New York. By Verplanck Colvin, Albany: 1873. 8vo., pp. 43. From the AUTHOR.

Catalogue of the principal Minerals of Colorado, with annotations on the local peculiarities of several species. By J.

Alden Smith. Central City, Col.: 1870. Pamph., 8vo., pp. 16.

Resources of the State of Kansas, with description of Counties, Railroads, Mines, and the city of Little Rock. By James P. Henry. Little Rock, Ark.: 1872. Pamph., 8vo., pp. 134.

First Annual Report on the Noxious Insects of the State of Illinois. By Benj. D. Walsh, M. A., Acting State Entomologist. Chicago: 1868. Pamph., 8vo., pp. 103.

Report of the Fruit Growers' Association of Ontario for the year 1870. Toronto: 1871. Pamph., 8vo., pp. 130.

Report of the Entomological Society of Ontario, for the year 1871. By the Rev. C. J. S. Bethune, M. A., William Saunders and Edmund Baynes Reed. Toronto: 1872. Pamph., 8vo., pp. 92.

Second Annual Report of the Missouri State Board of Agriculture for the year 1866. Jefferson City: 1867. 8vo., pp. 663.

Fourth Annual Report of the [Missouri] State Board of Agriculture for the year 1868. Jefferson City: 1869. pp. 582. [In same volume] First Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri. By Charles V. Riley, State Entomologist. Jefferson City, Mo.: 1869. 8vo., pp. 181.

Fifth Annual Report of the [Missouri] State Board of Agriculture for the year 1869. Jefferson City: 1870. pp. 269. With Proceedings of the Missouri State Horticultural Society at its Eleventh Annual Meeting. pp. 144. [In same volume] Second Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri. By Charles V. Riley, State Entomologist. Jefferson City: 1870. 8vo., pp. 141.

Sixth Annual Report of the [Missouri] State Board of Agriculture for the year 1870. Jefferson City, Mo.: 1871. pp. 186. [In same volume] Transactions of the Missouri State Horticultural Society at its Twelfth Annual Meeting. Jefferson City, Mo.: 1871. pp. 105. [Also in same volume] Third Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri. By Charles V. Riley, State Entomologist. Jefferson City, Mo.: 1871. 8vo., pp. 182.

Seventh Annual Report of the [Missouri] State Board of Agriculture for the year 1871. Jefferson City, Mo.: 1872. pp. 406. [In same volume] Proceedings of the Missouri Horticultural Society at the Thirteenth Annual Meeting. pp. 120. [Also in same volume] Fourth Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri. By Charles V. Riley, State Entomologist. Jefferson City, Mo. : 1872. pp. 151. [Also in same volume] Eleventh Annual Report of the St. Louis Agricultural and Mechanical Association. 8vo., pp. 160.

Report of the Exploring Expedition to the Rocky Mountains in the year 1842, and to Oregon and North California in the years 1843, 1844. By Brevet Capt. J. C. Fremont. Washington : 1845. 8vo., pp. 583.

Notes on the Later Extinct Floras of North America, with Descriptions of some New Species of Fossil Plants from the Cretaceous and Tertiary Strata. By J. S. Newberry, Prof. Geological School of Mines, Columbia College, New York. From the Annals of the Lyceum of Natural History in New York, vol. ix. April, 1868. Pamph., 8vo., pp. 76.

Trichina spiralis : A Lecture delivered at the College of Physicians and Surgeons, Feb. 26, 1869. By John C. Dalton, M. D. New York : 1869. Pamph., 8vo., pp. 4.

Contributions to the Fauna of the Gulf Stream at great depths. By L. F. de Pourtales. Cambridge : 1867, 1868. Pamph., 8vo., pp. 39.

Bulletin of the Essex Institute. Volume I. 1869. Salem, Mass. 1870. pp. 160. Volume II. 1870. pp. 178. Vol. III. 1871. pp. 176.

The above fifteen publications, from CHARLES VEATCH, Keytesville, Mo. In exchange.

Report of the Commissioner of Education for the Year 1872. Washington : 1873. 8vo., pp. 1018. From the Commissioner, Hon. JOHN EATON.

Auditor of Accounts' Annual Report of the Receipts and Expenditures of the City of Boston and the County of Suffolk, State of Massachusetts, for the Financial Year 1872–1873. Boston : 1873. 8vo., pp. 371. From ALFRED T. TURNER, Auditor.

Circular of Information of the Bureau of Education. Nos. 1 and 2. Washington: 1873. Pamph., 8vo., pp. 66, 30. From the U. S. BUREAU OF EDUCATION.

A Catalogue of the Shell-bearing Mollusca of Rhode Island, by Horace F. Carpenter. Central Falls, R. I., 1873. Quarto. From the AUTHOR.

Transactions of the New York State Agricultural Society. Volume XXXI. 1871. Albany, 1873. From T. L. HARISON, Secretary.

Bulletin de la Société des Sciences historiques et naturelle de L' Yonne. Année 1872. 26e volume, deuxième partie. Auxerre: 1873. From the SOCIETY.

Sitzungs-Berichte der naturwissenchaftlichen Gesellchaft Isis in Dresden. Jahrgang, 1871, 4–6; 1872; 1873, 1–3. From the SOCIETY.

Memoires pour servir a L'Histoire Naturelle du Mexique, des Antilles et des Etats-Unis, par Henri de Saussure. IVme Memoire. Mantides Amiericains. Tome 11me; Première Partie. Genève et Bale: 1871. Quarto, pp. 186. From the AUTHOR.

Climats, Géologie, Faune et Géographie Botanique du Brésil, par Emmanuel Liais. Ouvrage publié par ordre du Gouvernment Impérial du Brésil. Paris: 1872. Pamph. Royal 8vo., pp. 640. From A. P. DE CARVALHO BORGES, Brazilian Minister at Washington, in behalf of the Imperial Government of Brazil.

Spécies Général et Iconographie des Coquilles Vivantes, comprenant la collection du Muséum d' Histoire naturelle de Paris, la collection Lamarck, celle du Prince Masséna, et les Découvertes Récentes des Voyageurs. Par L.-C. Kiener. A Paris [9 vols., bound in 10 vols. Pages of text, 2116; plates (colored), 733.]* By purchase.

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* 1. Famille des Enroulées, 1 partie, Cypræa, pp. 166, plates 57; Ovula, pp. 26, plates 6; Terebellum, pp. 3, plates 1; Ancillaria, pp. 29, plates 6.

1. Famille des Enroulées, 2 partie; Conus, pp. 379, plates 111.

2. Famille des Columellaires; Mitra, pp. 120, plates 34; Voluta, pp. 69, plates 52; Marginella, pp. 44, plates 13.

Description des Animaux sans Vertèbres découverts dans le Bassin de Paris, comprenant une Revue Générale de toutes les Espèces actuellement connue, par G.-P. Deshayes. [Five volumes, quarto.] Tome premier. — Texte. Mollusques Acéphalés Dimyaires. Paris, 1860; pp. 912: Tome deuxième. — Atlas de 89 Planches. Paris, 1860. Tome deuxième. — Texte. Mollusques Acéphalés Monomyaires et Brachiopodes Mollusques Céphalés: Première Partie. Paris, 1864; pp. 968. Tome troisième. — Texte. Mollusques Céphalés: Deuxième Partie, Mollusques Céphalopodes. Paris, 1866; pp. 667. Atlas. Tome deuxième, de 107 Planches. Paris, 1866. By purchases.

Bulletin de la Société Impériale des Naturalistes de Moscou, Année 1872, No. 2, No. 3, No. 4. Année 1873, No. 1. From the SOCIETY.

Annual Report of the Comptroller of the State of New York, transmitted to the Legislature Jan. 7th, 1873. Albany, 1873: Pamph., 8vo., pp. 141. From HENRY GALLIEN, Deputy Comptroller.

The American Journal of Science and Arts. New Haven: 1871. Series III, Vol. I, No. 6; Vol. II, Nos. 7, 11; 1873, Vols. V and VI.

The American Naturalist. Salem, Mass.: 1873, vol. VII.

United States Railroad and Mining Register. Philadelphia: 1873. Vol. XVII. Folio.

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3. Famille des Ailées; Rostellaria, pp. 14, plates 4; Pterocera, pp. 15, plates 10; Strombus, pp. 68, plates 34.

4. Famille des Canalifères, 1 partie; Cerithium, pp. 104, plates 32; Pleurotoma, pp. 84, plates 27; Fusus, pp. 62, plates 30.

5. Famille des Canalifères, 2 partie; Pyrula, pp. 34, plates 15; Fasciolaria pp. 18, plates 13; Turbinella, pp. 50, plates 21; Cancellaria, pp. 44, plates 9.

6. Famille des Canalifères, 3 partie; Murex, pp. 130, plates 47; Triton, pp. 48 plates 18; Ranella, pp. 40, plates 15.

7. Famille des Purpurifères, 1 partie; Cassidaria, pp. 10, plates 2; Cassis, pp 40, plates 16; Dolium, pp. 16, plates 5; Harpa, pp. 12, plates 6; Purpura, pp. 151; plates 46.

8. Famille des Purpurifères, 2 partie; Columbella, pp. 63, plates 16; Buccinum, pp. 108, plates 31; Eburna, pp. 8, plates 3; Struthiolaria, pp. 6, plates 2; Terebra, pp. 42, plates 14.

9. Famille des Turbinacées; Turritella, pp. 46, plates 14; Scalaria, pp. 22, plates 7; Solarium, pp. 12, plates 4; Rotella, pp. 10, plates 3; Delphinula, pp. 12, plates 4; Phasianella, pp. 11, plates 5.

The Engineering and Mining Journal. New York: 1873. Vol. XV; Vol. XVI, Nos. 1, 2. Quarto.

The above four publications, by subscription.

First Annual Report of the Trustees of the Peabody Academy of Science, January, 1869. Salem: 1869. Pamph., 8vo., pp. 103.

Second and Third Annual Reports of the Trustees of the Peabody Academy of Science, for the years 1869 and 1870. Salem: 1871. Pamph., 8vo., pp. 109.

Fourth Annual Report of the Trustees of the Peabody Academy of Science, for the year 1871. Salem: 1872. Pamph. 8vo., pp. 147.

Fifth Annual Report of the Trustees of the Peabody Academy of Science, for the year 1872. Salem: 1873. Pamph., 8vo., pp. 135.

Memoirs of the Peabody Academy of Science. Salem, Mass.: Volume I. Numbers I, II and III. Pamph., royal 8vo.

First Memoir: Revision of the Large, Stylated Fossorial Crickets. By Samuel H. Scudder. March, 1869. pp. 28, with 1 pl. Second Memoir: Embryological Studies on Diplax, Perithemis, and the Thysanurous Genus Isotoma. By A. S. Packard, Jr. March, 1871. 21 pp., 3 plates. Third Memoir: Embryological Studies on Hexapodous Insects. By Alpheus S. Packard, Jr. April, 1872. 17 pp., 3 plates.

From the PEABODY ACADEMY OF SCIENCE. (Seven pamphlets.)

Geological Survey of Illinois. A. H. Worthen, Director. Volume V. Geology and Palæontology. Geology, by A. H. Worthen and James Shaw. Palæontology, by F. B. Meek and A. H. Worthen. Springfield, Ill.: 1873. Sm. quarto, pp. 624, pls. 32. From A. H. WORTHEN.

Bulletin of the Buffalo Society of Natural Sciences. Buffalo: 1873. Vol. I, Nos. 1, 2, 3.

LIST OF ROCK SPECIMENS,

FROM CUMBERLAND, ENGLAND, PRESENTED TO THE STATE MUSEUM

In the "De Rham Collection" presented, in the year 1849, to the State Cabinet of Natural History, by H. C. De Rham, Esq., was a package labeled "50 Rock Specimens from Cumberland." An acknowledgment of the number of specimens appears in the Third Annual Report on the State Cabinet, 1850, p. 35, with the statement that they were received unaccompanied by a catalogue, but it was hoped that one would be prepared for publication in the next Report.

The package was subsequently mislaid, and remained overlooked until its indorsement had become so obliterated, that a clue was, with difficulty, obtained, by which it could be referred to the above collection. A list of its contents has been prepared, and is herewith given.

1. Gray Granite.
2. Hornblende rock.
3. Gray Granite.
4. Hornblendic Slate.
5. Pyritiferous Slate.
6. Chiastolite Slate.
7. Carboniferous Limestone.
8. Gray Sandstone.
9. Cellular Quartz.
10. Greenstone Porphyry.
11. Jaspery Slate.
12. Diorite.
13. Diorite.
14. Ochre-yellow Jasper.
15. Galena.
16. Amygdaloidal Chalcedony.
17. Chiastolite in Slate.
18. Greenish Jasper.
19. Amygdaloid in Jaspery rock.
20. Feldspathic Ash.
21. Gray Granite.
22. Jaspery Slate.
23. Greenstone.
24. Vein Quartz.
25. Porphyry.
26. Greenstone.
27. Feldspathic Porphyry.
28. Porphyritic Slate.
29. Jasper Porphyry.
30. Syenite.
31. Carboniferous Limestone with Syringopora.
32. Limestone.

33. Carboniferous Limestone.
34. Serpentine in Quartz.
35. Greenstone Porphyry.
36. Hornblendic Granite.
37. Feldspathic Porphyry.
38. Greenstone Porphyry.
39. Greenstone.
40. [Missing.]
41. Plumbago.
42. Sileceous Slate.
43. Porphyry.
44. Granite.
45. Hornblendic rock.
46. Crystalline Quartz.
47. Argillaceous Slate.
48. Steatite.
49. Porphyritic Granite.
50. [Missing.]

LIST OF LAND AND FRESH-WATER SHELLS,

PRESENTED TO THE STATE MUSEUM BY TRUMAN H. ALDRICH, SELMA, ALA.

Unio asper *Lea*	Selma, Ala	1
Unio asperatus *Lea*	Selma, Ala	3
Unio cariosus *Say*	Troy, N. Y	—
Unio complanatus *Sol*	Troy, N. Y	10
Unio consanguineus *Lea*	Selma, Ala	1
Unio cornutus *Barnes*	Selma, Ala	1
Unio crassidens *Lam*	Selma, Ala	1
Unio excavatus *Lea*	Selma, Ala	1
Unio ebenus *Lea*	Selma, Ala	2
Unio Forsheyi *Lea*	Bogue Chitto Cr., Ala.	1
Unio gibbosus *Barnes*	Michigan	1
Unio inflatus *Lea*	Selma, Ala	1
Unio interventus *Lea*	Cahawba River, Ala	3
Unio latecostatus *Lea*	Selma, Ala	2
Unio metanever *Raf*	Selma, Ala	1
Unio nasutus *Say*	Troy, N. Y	3
Unio negatus *Lea*	Bogue Chitto Cr, Ala	2
Unio ochraceus *Say*	Troy, N. Y	2
Unio penitus *Conr.* ♀	Selma, Ala	1
Unio plenus *Lea*	Selma, Ala	2
Unio purpuratus *Lam*	Selma, Ala	1
Unio pyramidatus *Lea*	Selma, Ala	1
Unio radiatus *Lam*	Troy, N. Y	8
Unio rubellinus *Lea*	Montevallo, Ala	3
Unio securis *Lea*	Selma, Ala	1
Unio subglobosus *Lea* = solidus var	Selma, Ala	1
Unio sublatus *Lea*	Montevallo, Ala	2
Unio subtentus *Lea*	Tennessee	1
Unio Tappanianus *Lea*	Cohoes, N. Y	4
Unio tuberculatus *Barnes*	Selma, Ala	1
Margaritana marginata *Say*	Ohio	1
Margaritana rugosa *Lea*	Troy, N. Y	2

Margaritana undulata *Lea*	New York	1
Anodonta decora *Lea*	Ohio River	1
Anodonta fluviatilis *Lea*	Troy, N. Y	3
Anodonta implicata *Say*	Troy, N. Y	2
Anodonta lacustris *Lea*	Cedar Lake, N. Y	1
Anodonta Lewisii *Lea*	Troy, N. Y	3
Anodonta undulata *Say*	Beaver Creek, N. Y	1
Pisidium æquilaterale *Pr*	Mohawk River, N. Y	28
Pisidium compressum *Pr*	Mohawk River, N. Y	51
Sphærium partumeium *Say*	Newark, N. J	3
Sphærium simile *Say*	Irvington, N. J	3
Sphærium striatinum *Lam*	Mohawk, N. Y	23
Valvata tricarinata *Say*	Mohawk, N. Y	55
Amnicola Cincinnatiensis *Anth*	Erie Canal, N. Y	24
Bythinella obtusa *Lea*	Erie Canal, N. Y	34
Gillia altilis *Lea* (Lewis)	Troy, N. Y	132
Somatogyrus subglobosus *Say* (Lewis)	Mohawk, N. Y	22
Melantho rufa *Hald*	Troy, N. Y	3
Melantho decisa *Say*	Newark, N. J	29
Melantho Nolani *Tryon*	Selma, Ala	8
Melantho integer *Say*	Troy, N. Y	13
Melantho integer *Say*, reversed	Mohawk, N. Y	1
Planorbis trivolvis *Say*	Troy, N. Y	10
Planorbis trivolvis *Say*	East Newark, N. J	60
Planorbis armigerus *Say*	Burlington, Vt	8
Planorbis bicarinatus *Say*	Columbia, Pa	7
Physa heterostropha *Say*	Albany, N. Y	4
Physa ancillaria *Say*	Troy, N. Y	11
Limnæa catoscopium *Say*	Mohawk River, N. Y	4
Limnæa desidiosa *Say*	Newark, N. J	20
Limnæa elodes *Say*	Troy, N. Y	18
Limnæa humilis *Say*, var. parva *Lea*	Albany, N. Y	6
Limnæa humilis *Say*,	Charleston, S. C	20
Limnæa reflexa *Say*	Pennsylvania	2
Goniobasis livescens *Menke*	Troy, N. Y	10
Goniobasis lita *Lea*	Selma, Ala	3
Goniobasis quadricincta *Lea*	Montevallo, Ala	16
Goniobasis virginica *Gmel*	Erie Canal, N. Y	9
Goniobasis pudica *Lea*	Selma, Ala	1
Goniobasis Vanuxemensis *Lea*	Selma, Ala	14
Eurycœlon lepida *Lea*	Selma, Ala	9
Trypanostoma Conradi *Tryon*	Beech Creek, Selma, Ala	7
Trypanostoma subulare *Lea*	Mohawk River, N. Y	4

Trypanostoma prasinatum *Conr*	Selma, Ala	23
Anculosa picta *Conr*	Selma, Ala	26
Cyonella subcylindrica *Linn*	Troy, N. Y.	6
Succinea ovalis *Gould*	Troy, N. Y.	10
Succinea avara *Say*	Troy, N. Y.	18
Succinea Totteniana *Lea*	Orono, Me	3
Helix albolabris *Say*	Silver Springs, Penna.	4
Helix albolabris *Say*	Troy, N. Y.	2
Helix alternata *Say*	Troy, N. Y.	5
Helix alternata *var.* mordax	Tennessee	1
Helix appressa *Say*	Albany, N. Y.	1
Helix appressa *Say*	Selma, Ala	3
Helix arborea *Say*	Troy, N. Y.	12
Helix bucculenta *Gould*	Long Island	2
Helix capsella *Gould*	Tennessee	2
Helix clausa *Say*	Ohio	2
Helix concava *Say*	Pennsylvania	2
Helix elevata *Say*	Tennessee	2
Helix exoleta *Say*	Ohio	1
Helix fallax *Say*	Tennessee	4
Helix fuliginosa *Griff*	Mohawk, N. Y.	2
Helix gularis *Say*	Tennessee	3
Helix hirsuta *Say*	Franklin, N. J.	2
Helix hortensis *Mull*	Maine	1
Helix inflecta *Say*	Albany, N. Y.	2
Helix interna *Say*	Albany, N. Y.	1
Helix lævigata *Pfr*	Tennessee	1
Helix ligera *Say*	Albany, N. Y.	1
Helix lineata *Say*	Maine	3
Helix minuta *Say*	Troy, N. Y.	57
Helix Mitchelliana *Lea*	Ohio	2
Helix monodon *Rack*	Essex, N. Y.	2
Helix multidentata *Say*	Albany, N. Y.	1
Helix multilineata *Say*	Ohio	2
Helix nitida *Mull*	Cherry Valley, N. Y.	4
Helix palliata *Say*	Ohio	1
Helix Pennsylvanica *Green*	Ohio	1
Helix perspectiva *Say*	Albany, N. Y.	20
Helix profunda *Say*	Ohio	2
Helix rugeli *Shutt*	Tennessee	2
Helix stenotrema *Fer*	Tennessee	7
Helix striatella *Anth*	Troy, N. Y.	—
Helix suppressa *Say*	Columbia, Penna	4

Helix thyroides *Say*	Albany, N. Y.	2
Helix tridentata *Say*	Troy, N. Y.	26
Helix viridula *Menke*	Troy, N. Y.	2
Melampus bidentatus *Say*	Coney Island, N. Y.	31

LIST OF GOULD TYPES OF MOLLUSCA,

IN THE COLLECTION OF THE STATE MUSEUM.

A 5358	Fusus fidicula	Puget Sound	2
A 6269	Chrysodomus dirus *Rve.* *Fusus incisus* Gould	Neeah Bay, W. T.	2
G 2492	Drillia reciproca	Ousima	1
G 2495	Daphnella deluta	China	1
A 6307	Tritonium Rodgersi		2
A 6306	Tritonium Stimpsoni	Arctic Ocean	1
A 427	Triton mundum	Arctic Ocean	1
A 2597	Buccinum farinosum	Sandwich Isl.	7
G 2543	Nassa beata	Loo Choo Isl.	6
G 2559	Nassa cinctella	Pacific O.	1
G 2560	Nassa curta	Samoa Isl.	1
A 4696	Nassa dermestina		1
A 4664	Nassa elata	W. Africa	2
G 2965	Nassa mendica	Oregon	5
G 2556	Nassa mendica	Puget Sound	1
A 6364	Nassa mendica	Vancouver—Cal.	28
A 4695	Nassa optata		1
A 5735	Nassa plebecula		1
A 4694	Nassa plebecula		8
G 2489	Nassa spurca		4
A 6358	Purpura ostrina	Puget Sound	1
G 2557	Purpura ostrina	Killimack, Or.	1
———	Purpura saxicola *Val.*, var.=*P. Ostrina* Gld	Vancouver—Cal.	5
A 6350	Olivella bætica *Cpr.* *Olivella petiolita* G.	Vancouver—Cal.	8
A 4548	Mitra florida		1
G 2763	Mitra cophina		2
A 4277	Erato leucophæa	Sta. Barbara	2
G 2490	Columbella (Strombina) pungens	Bonin Isl.	4
G 2464	Anachis atrata	Hongkong	2
G 2463	Anachis minuscula	Ousima	3
G 2465	Anachis zonata	Japan	2
G 2558	Amycla gausapata	Puget Sound	1
A 6335	Amycla gausapata		54
A 3078	Sigaretus debilis		1
A 3007	Natica caurina		6
A 5747	Natica Lewisii	Puget Sound	3
A 6302	Natica severa	Hakodadi	1
A 6355	Opalia borealis	Neeah Bay, W. T.	29
———	Lunatia pallida *Brod.-Sby.* *Natica caurina+N. soluta* Gld	Neeah Bay, W. T.	4

A 2786	Terebra arguta	Mazatlan	8
A 3112	Chemnitzia tenuicula	Sta. Barbara	1
A 3114	Chemnitzia torquata	Sta. Barbara	1
A 3111	Odostomia Achates	Sta. Barbara	1
A 3110	Odostomia gravida	Sta. Barbara	1
G 2458	Monoptygma acuminata	Ousima, Japan	1
G 2457	Monoptygma puncticulata	China Sea	1
G 2459	Monoptygma sinuata	China Sea	1
A 3503	Stylifer acicuta		10
A 6342	Conus Californicus *Hds.* *Conus ravus* G.	California	1
G 923	Conus castrensis		1
A 4648	Conus purillus	Mazatlan	1
A 3215	Conus ravus	Acapulco	1
A 4063	Cypræa gemmula		105
G 2618	Pedicularia decussata		4
G 2570	Cerithium irroratum	California	1
A 162	Cerithium irroratum	Panama	3
G 2471	Bittium craticulatum	Hongkong	7
A 6363	Bittium filosum	Neeah Bay	94
A 129	Cerithidea fuscatus	San Diego	5
A 121	Cerithidea sacratum	San Francisco	4
G 2582	Melania baccata	Tavoy	2
G 2580	Melania batana	Burmah	18
G 2580	Mel. (Melasma) batana	Burmah	26
A 6339	Melania bulbosa var. jun.		1
G 2578	Melania corporosa	Tahiti	2
A 6755	Melania Cybele (?)		6
G 2394	Melania dolorosa	Hakodadi	5
G 2581	Melania (Melasma) fluctuosa	Tavoy	1
G 2585	Melania gracilina	Tahiti	13
580	Melania herculanium		10
A 3909	Melania herculis		13
G 2395	Melania lutosa	Upolu, Samoa Isl.	4
G 2395	Melania lutosa (young)	Upolu, Samoa Isl.	3
A 3904	Melania mutans		1
G 2579	Melania pagodula	Burmah	2
A 4109	Melania Scipio	Feejee Isl.	13
G 2398	Melania scitula	Upolu, Samoa Isl.	7
G 2631	Melania Terpsichore	Feejee Isl.	5
A 6754	Melanopsis Zelandica		8
G 2564	Littorina acuminata	Mangsi Isl.	1
G 2563	Littorina caliginosa	Terra del Fuego	43
G 2565	Littorina lepida	Puget Sound	4
G 2568	Littorina plena	San Francisco	2
A 6333	Littorina plena *var.*	California	3
G 2567	Littorina scutulata	San Francisco	7
A 6332	Littorina scutulata. *Var.*=L. plena	Neeah Bay, W. T.	3
A 6334	Littorina scutulata *var.*	Neeah Bay, W. T.	2
G 2526	Tectarius luteus	China Sea	2
———	Modulus dorsuosus	Acapulco	2
G 2537	Lacuna carinata	Puget Sound	2

A 6344	Lacuna solidula *Lov.* *Lacuna carinata* G.	Neeah Bay, W.T.	6
G 2692	Fossarus pusillus	Liberia	19
G 2468	Rissoina villica	Loo Choo	2
G 2466	Alvania fusca	Hakodadi	2
G 2467	Alvania ligata	Hongkong	1
G 2566	Amnicola badia	New Zealand	14
G 2700	Amnicola corolla	New Zealand	7
A 3850	Amnicola porata		4
———	Paludina dolarius		165
A 5131	Paludina petrosa	Tavoy	3
G 2575	Nematura puncticulata	Tavoy	1
A 3887	Valvata pupoidea	Cambridge, Mass.	121
G 2353	Ampullaria balanoides	Tavoy	2
G 2803	Turritella gracilis		2
A 6361	Galerus fastigiatus		2
A 6349	Crepidula adunca *Sby.* *Crepidula rostriformis* G.	Vancouver—Cal.	18
A 49	Crepidula explanata	Monterey, Cal.	4
A 6351	Crepidula lingulata	Neeah Bay, W.T.	2
A 6353	Crepidula navicelloides *Nutt.* Var.=*C. numaria* G. Var.=*C. explanata* G.	Vancouver—Cal.	10
A 46	Crepidula rostriformis	Sta. Barbara	7
A 3113	Narica ovoidea	Mazatlan	1
A 4407	Nerita amœna		4
G 2446	Nerita pica	Simoda	2
A 4417	Nerita siderea		13
G 2630	Neritina porcata	Feejee Isl.	3
A 3818	Neritina siderea	Feejee Isl.	10
C 68	Pelex lateralis	New Zealand	2
A 6048	Pelex lateranis [lateralis?]	New Zealand	2
G 2535	Phasianella compta	Sta. Barbara	41
G 2439	Turbo nocturnus	Simoda	3
G 2454	Liotia asteriscus	Hongkong	2
G 2453	Ethalia capillata	China Coast	2
A 2918	Trochus amœnus	Feejee Isl.	21
A 3312	Trochus laciniatus	New Caledonia	1
———	Trochus pyriformis	San Diego	1
A 2905	Trochus tantillus		34
G 2530	Trochus (Collonia) verruca	Sandwich Isl.	12
G 2420	Polydonta (Infundibulum) lacertinum	Hongkong	4
A 3345	Monodonta gemmatus	West Africa	5
A 6359	Calliostoma costatum *Mart.* *Trochus ligatus* G.	Vancouver—Cal.	99
G 2433	Zizyphinus infuscatus	Kagosima Bay	4
G 2434	Zizyphinus urbanus	Kagosima Bay	2
G 2416	Chlorostoma Achates	Simoda	1
G 2417	Chlorostoma rugatum	Hakodadi	7
G 2415	Chlorostoma undatella	Ousima	4
G 2413	Monilea (Solariella) glareosa	Loo Choo—Ousima,	2
G 2414	Monilea (Omphalius) spuria	Simon's Bay.	*
A 6352	Gibbula pulligo *Mart.* *Trochus marcidus* G.	Neeah Bay, W.T.	2
G 2451	Gibbula fulgens		1
G 2436	Gibbula gaudiosa	False Bay	2

* The vial contains only the label.

G 2450	Gibbula gaudiosa	Cape of Good Hope,	2
A 2914	Gibbula lepida	N. Ireland	10
G 2437	Gibbula musiva	Simon's Bay	3
G 2440	Margarita musiva	Hongkong	2
O 2214	Stomatella tumida=papyracea *Chem.*		3
G 2212	Gena concinna		3
G 2405	Dentalium aciculum	China Sea	1
G 2407	Dentalium buccinulum	Kagosima	1
G 2411	Dentalium clavatum	Hongkong	1
G 2406	Dentalium hexagonum	Hongkong	1
G 2408	Dentalium intercalatum	China	1
G 2409	Dentalium porcatum	Hongkong	1
G 2410	Dentalium strigatum	Cape of Good Hope,	2
G 2442	Clypidina textilis	Ousima	1
A 6514	Lottia pintadina	Puget Sound	2
G 2441	Scuttellina scobinata	Ousima	1
A 6267	Scurria mitra *Esch. Patella conica* G.	Neeah Bay, W. T.	5
———	Scurria (Patella) conica		37
A 6517	Patella textilis	Oregon	2
A 6346	Acmæa pelta *Esch. Patella fimbriata* G.	Vancouver—Cal.	4
A 6347	Acmæa persona *var.* textilis	California	1
A 6357	Acmæa spectrum *Nutt. A. scabra* (pars) G; pars *A. persona* var.	California	1
A 6356	Nacella instabilis	Neeah Bay, W. T.	4
A 5467	Chiton fruticosus		1
A 3165	Acanthochites Achates	Ousima	3
A 3129	Acanthopleura spiniger *Sby. Chiton incana* G.		2
———	Ischnochiton interstinctus	Vancouver—Cal.	1
A 6360	Mopalia Merckii *Midd. Chiton lignosus* G.	Vancouver—Cal.	2
A 6354	Mopalia muscosa	Vancouver—Cal.	1
G 1904	Mopalia muscosa (C. muscosus)	Panama	2
A 6512	Bulla nebulosa	San Diego	1
A 1247	Vitrina præstans	Burmah	7
G 2643	Succinea canella	Sandwich Isl.	15
G 2644	Succinea cepulla	Sandwich Isl.	11
G 2637	Succinea crocata	Samoa Isl.	10
A 1523	Succinea explanata	Kauai	1
G 2651	Succinea humerosa	Tahiti	1
G 2638	Succinea infundibuliformis	Tahiti—Eimeo	3
G 2572	Succinea lauta	Hakodadi	8
G 2646	Succinea lumbalis	Sandwich Isl.	9
G 2642	Succinea Magellanica	Terra del Fuego	2
G 2639	Succinea procera	Tahiti—Eimeo	2
G 2641	Succinea pudorina	Tahiti—Eimeo	6
G 2640	Succinea putamen	Upolu	4
G 2649	Succinea semiserica	Tavoy	11
G 2650	Succinea spurca	Liberia	23
G 2648	Succinea venusta	Tahiti	4
A 4576	Achatina balteata		3
A 6258	Achatina interstinctus		2
A 4575	Achatina interstinctus (?)		5

A 1209	Achatina involuta	Liberia	17
A 4570	Achatina prunum		1
A 4572	Achatina siderea		7
A 6508	Achatina ventricosa		1
A 1175	Achatinella guttula. *Achatinella nitida* Newc.		23
A 1172	Achatinella nucleola	Sandwich Isl.	67
A 1171	Achatinella striatula	Sandwich Isl.	30
A 1107	Achatinella torrida	Liberia	1
A 1138	Partula zebrina		1
A 6524	Bulimus atricallosus		2
A 513	Bulimus infrafasciatus	Liberia	18
G 2573	Bulimus junceus (A 2140, 2do)	Sandwich Isl.	1
A 1152	Bulimus junceus	Oahu	71
A 2146	Bulimus paritura		12
A 4562	Bulimus pruninus		3
A 1062	Bulimus vegetus!	San Juan	1
A 5494	Bulimus vesicalis!	Lower California	1
A 5109	Goniostomus bulbosa	Oregon	9
A 5354	Bulimulus pallidior *Sby.* *Bulimus vegetus* G.	Cape St. Lucas	1
A 5793	Pupa curvidens	Chelsea Beach Isl.	5
A 1267	Pupa lachryma	Liberia	8
A 6038	Pupa mellita	Burmah	3
G 2691	Pupa nacca	Sandwich Isl.	6
A 5791	Pupa servilis	St. Thomas	39
A 6037	Pupa simplex		3
A 1262	Ennea capitata	Liberia	17
A 1257	Ennea pumilio		1
A 1265	Ennea pumilio	Liberia	2
G 2687	Vertigo lyrata	Kauai, Sandw. Isl.	41
A 5631	Vertigo ovata	Cumberland, Me.	10
A 6462	Cylindrella jejuna	Florida	3
A 1761	Cylindrella litnus=*C. elegans* Pfr.	Haiti	4
A 1726	Cylindrella perlata		3
A 6468	Cylindrella pontifica	Florida	7
A 5375	Cylindrella pontificalis		7
A 1779	Cylindrella porrecta		27
A 1737	Cylindrella Suwalleana	Brazil	2
A 1737	Cylindrella lactaria=*C. variegata* Pfr.		6
A 6206	Streptaxis alisa [elisa?]	Mergui	3
A 1864	Streptaxis Petitii	Burmah	3
A 1862	Streptaxis prostrata	Liberia	8
A 5347	Helix æruginosa	California	4
A 569	Helix anceps	Tavoy	11
A 558	Helix anguina		3
A 5370	Helix arrosa		2
A 4164	Helix bucculenta	Rhode Island	8
A 744	Helix bursatella		5
G 2625	Helix casca	Feejee Islands	3
A 866	Helix cesticulus (possibly *Gund*)	Cuba	5
A 499	Helix cestus *Benson.* *H. anceps* G.	Mahableshwur, Ind.	2
A 754	Helix cicercula	Sandwich Islands.	8

A 747	Helix cryptoportica	.....	2
A 747*a*	Helix cryptoportica	.....	5
A 782	Helix cultrata	.....	1
G 2624	Helix dædalea	Matea	1
A 5346	Helix devia	Oregon	1
A 743	Helix Eurydice	.....	7
A 748	Helix exæquata *H. disculus* Pfr.	.....	14
A 766	Helix fornicata	.....	8
A 560	Helix gabata	Tavoy	3
A 581	Helix gulosa	.....	2
A 675	Helix hepatizon	.....	1
A 578	Helix honesta	Tavoy	5
A 704	Helix infrendens	Burmah	6
A 6461	Helix infrendens	.....	1
A 5371	Helix infumata	.....	1
A 5393	Helix labiosa	.....	1
A 561	Helix læta	Hakodadi	2
A 6419	Helix leporina	.....	1
A 5351	Helix loricata	.....	3
A 5409	Helix maxillata	.....	3
A 764	Helix paucistriata	.....	1
G 2478	Helix pauper	Kamtschatka	3
G 2478	Helix pauper—hystrix var.?	Kamtschatka	6
A 781	Helix pauxillus	Sandwich Islands	10
A 784	Helix pauxillus	Sandwich Islands	3
A 6225	Helix pencillata *H. cubensis* Pfr.	.....	35
A 6225	Helix pencillata	Cuba	5
A 567	Helix procumbens	.....	2
G 2479	Helix pulvinaris	Hongkong	1
G 2456	Helix pupula	Hokodadi	1
A 562	Helix refuga	Tavoy	2
A 564	Helix repercussa	Burmah	6
A 708	Helix retrorsa	.....	4
A 582	Helix rubricata	.....	1
A 6460	Helix selenina	Florida	2
A 5372	Helix selenina (?)	.....	37
A 765	Helix setigera	.....	6
A 767	Helix setigera	.....	14
A 5373	Helix sportella	.....	1
A 768	Helix stellula	.....	1
A 5876	Helix subtilissima	.....	4
A 5881	Helix subtilissima	Maui	2
A 557	Helix talcosa	Liberia	1
A 4591	Helix talcosa	Feejee Islands	1
A 734	Helix Troilus	Upolu	9
A 772	Helix tumulus	.....	2
A 5461	Helix vultuosa	.....	4
G 2562	Nanina ruida	Feejee Islands	
G 2627	Helicina beryllina	Feejee Islands	1
A 1829	Helicina concinna	.....	
G 2628	Helicina fulgora	Upolu	5

A 1808	Helicina glabra	Cuba	5
G 2629	Helicina pallida	Feejee Islands	7
A 1817	Helicina trochlea	Matea Island	7
G 2626	Helicina uberta	Tahiti	5
G 2480	Helicina verecunda	Loo Choo	2
A 6362	Macrocyclis Vancouverensis *Lea*, var.=Helix sportella *G*	Oregon Dist.	1
A 6214	Leuconia opportuna		1
A 5429	Pedipes ——?		9
A 3039	Lymnæa chalybea	Ohio	14
G 2528	Lymnæa volutata	Oahu	2
A 3030	Lymnæa lanceolata	Lake Superior	3
A 1794	Physa elata	Mexico	5
G 2636	Physa gibbosa	N. S. Wales	1
A 2745	Physa humerosa		10
G 2538	Physa sinuata	Feejee Islands	2
G 2539	Physa tabulata	New Zealand	3
A 2743	Physa vinosa		5
——	Planorbis Ammon	Cienega Grande	66
A 6291	Planorbis dentatus	Cuba	17
A 6459	Planorbis gracilentus		6
G 2577	Ancylus aduncus	Madeira	2
A 2401	Siphonaria inculta *S. cancer* Rve.		1
——	Cyclotus pernobilis		7
A 5406	Megalomastoma bicolor		10
G 2527	Paxillus lyratus	Loo Choo	3
A 6268	Cyclostoma catenatum	Cuba	6
A 1649	Cyclostoma clathrata	Socotra Island?	6
A 1672	Cyclostoma cucullatum	Mergui	2
A 1632	Cyclostoma Dandinoti	Monte Toro	3
A 1634	Cyclostoma decoloratum	Monte Toro	2
A 1607	Cyclostoma dentatum		17
A 4563	Cyclostoma dentatum		84
A 5853	Cyclostoma musiva		2
G 2621	Cyclostoma (Ostodes) obligatum	Matea	5
A 1491	Cyclostoma perplicatum		2
G 2622	Cyclostoma (Ostodes) plicatum	Tahiti	10
G 2623	Cyclostoma (Ostodes) strigatum	Tahiti	11
G 2634	Cyclostoma (Omphalotropis) scitulum	Tahiti	1
——	Cyclostoma sectilabrum		1
A 1615	Cistula latum	Cuba	3
G 2632	Omphalotropis roseum	Feejee Islands	24
G 2633	Omphalotropis terebrale	Tahiti and Eimeo	2
G 2541	Truncatella rostrata	Rio Janeiro	4
G 2445	Assiminia debilis	Loo Choo	5
A 6317	Æsopus Japonicus		1

Lamellibranchiata.

A 2354	Pholas branchiata	West Africa	2
G 2963	Chœna (Cucurbitula) lagenula	Burmah	1
A 6320	Solen pardilis		2v.

A 5952	Machæra maximus	Oregon	1
G 2500	Lyonsia ventricosa	Hakodadi	1
G 2499	Theora nitida	Hongkong	1
A 2910	Lutraria undulata !	.....	1
A 5695	Lutraria ventricosa	Mazatlan ?	1½
———	Standella falcata	California	1
G 2195	Psammobia florida	Sana Isl., Ireland	2
G 2128	Strigilla fucata	San Diego	5½
A 249	Tellina miniata !	San Juan	1
G 2087	Tellina rubicunda	Africa	1
A 6343	Donax Californicus *Conr. D. obesus* Gld.	California	1
A 977	Donax flexuosus	.....	3
A 961	Donax tinctus	Mergui	11
G 2173	Semele flavescens !	San Diego	1
A 264	Semele flavescens	Mazatlan	1
G 2156	Mesodesma mundum	Mergui	1v.
G 2510	Mesodesma mundum	Hongkong	1
G 2574	Ervilia concentrica	Virginia	5
G 1233	Artemis saccata !	Mazatlan	1
G 2520	Tapes vernicosa	Hakodadi	1½
A 6348	Tapes staminea *Conr.* var Petitii *Desh.*, = *Venus rigida* G.	Vancouver	2
G 2141	Petricola bulbosa !	Gulf of California	1
A 985	Lucina orbella (A 991, 2 do.)	San Diego	1
G 2542	Lucina (Codakia) ramulosa	Paumotu Island	4
G 2496	Codakia parvula	Bonin Island	1½
G 2509	Pythina convexa	Simon's Bay	1
G 2659	Scintilla ovata	Kauai	3
A 5190	Unio coruscus	Florida	3
A 6410	Unio crispatus	.....	1v.
A 5710	Unio generosus (5770 in Cat.)	Brit. Burmah	5
A 5170	Unio lepidus !	Florida	1
A 6406	Unio lutulentus	New Zealand	2
A 6409	Unio manubius !	Chihuahua	2
A 5189	Unio paludicolus	.....	3½
A 5189	Unio paludicolus ?	.....	11+7v.
A 6405	Unio petrinus !	Llanos River	1
A 5713	Unio Tavoyensis !	Tavoy	1
A 5713	Unio Tavoyensis and varieties	Salwen riv., Burmah	9
A 5707	Unio verecundus (5706 in Cat.)	.....	1
———	Margaritana margaritifera *Linn.* *A. falcata* Gld.	American riv., Cal	2
A 6408	Alasmodon falcata	Oregon	1
A 6407	Alasmodon femoralis	Walla Walla River,	1
A 5660	Anodonta ciconia !	Mexico	2
A 5500	Anodonta ciconia	Mazatlan	2
A 5670	Anodonta (Pseudodon) Salweniana	Salwen riv., Tavoy	1
G 2525	Mytilus coruscus	Hakodadi	3
A 2456	Mytilus coruscus	.....	1
A 4716	Mytilus glomeratus !	San Francisco	2
A 3450	B falcatus !	.....	3½
G 2571	Modiolarca pusilla	Orange Harbor	5

A 2490	Avicula sterna	Mazatlan	1
A 5421	Nucula sapotilla		4
G 2652	Leda unca	N. Carolina Coast	1v.
A 6345	Pecten hastatus *Sby.* *P. hericeus* Gld	Neeah Bay, W. T.	1
G 2694	Pecten lætus	Oregon	3v.
A 5937	Pecten lætus	Hakodadi	2½
A 6224	Pecten lætus		3
A 4549	Pecten lætus		4½
G 2921	Plicatula simplex		2½

The above collection, arranged under glass, in the Directors' room of the museum, contains three hundred and sixty-two species, represented in two thousand eight hundred and eighty-three examples.

LIST OF BUILDING STONES

CONTAINED IN THE ECONOMIC COLLECTION OF THE STATE MUSEUM.

The collection of Building Stones, arranged in the entrance hall of the State Museum, from the number, variety and character of specimens which it contains, ranks, it is believed, second to none other of its kind in the country. It owes its origin to a tour of inspection made by Prof. James Hall, in the year 1867, to the principal quarries in New York, the Eastern States and Ohio, under direction of the "Capitol Commissioners," with a view of obtaining such information as would permit of the selection of the best material for the construction of the new capitol at Albany. As a result of such examinations, a number of blocks of granite, marble, limestone and sandstone were contributed to the Museum by the owners of the quarries visited, nearly all of which, for the proper display and convenience of comparison, had been prepared of a uniform size of a cubic foot, and exhibiting on their several faces the most approved styles of rock-dressing, and a polished surface when practicable.

The collection, thus commenced, has subsequently been much enlarged by contributions from other quarries, the proprietors of which have recognized the benefit naturally to accrue from a representation of their products in a public and central place, where general attention would be drawn to them, or parties desiring to select a building stone could be referred for examination, and for reliable information.

The collection at present contains, as enumerated in the list given below, seventy specimens of Granite, Gneiss, Syenite, or their varieties; forty-eight specimens of Marbles or metamorphic crystalline Limestone; twenty-seven of Limestone non-metamorphic; and thirty-three of Sandstone and its varie-

ties. The entire number is one hundred and seventy-eight; of these ninety-five (30 granites, 24 limestones, 18 marbles and 23 sandstones) are from quarries in the State of New York; ten (granites) from quarries in Maine; six (granites) from New Hampshire; twenty-six (16 marbles and 10 granites) from Vermont; twenty (13 granites, 6 marbles and 1 sandstone) from Massachusetts; three (marbles) from Connecticut; two (sandstones) from Maryland; six (sandstones) from Ohio; four from Michigan; two (sandstones) from Wisconsin; and four from sources unknown.

The several blocks are conspicuously labeled, giving, in addition to the name, the locality from which they were derived and name of donor. For the purpose of geological study, the limestones and sandstones bear, also, the geological formation to which they belong. The number upon the labels (duplicated in red on one of the corners) corresponds with the number by which each is designated in the following list:

I. Granites and Granitic rocks.

1. QUINCY GRANITE. A dressed block, of one cubic foot. Old Quincy Quarries. From the Quincy Railway Granite Company.

2. QUINCY GRANITE. A dressed block, of about ten inches cube, with one side showing rock fracture. From the same source as the above.

3. QUINCY GRANITE. A block, 12x7x6 inches, light-colored, three sides dressed, and the remaining sides showing rock fracture. From the quarries of Rogers & Co., Quincy, Mass.

4. GRAY GRANITE. A rough block, of about 10x9x7 inches, from the quarries at Rockport, Cape Ann, Mass. Of the Museum collections.

5. PORPHYRITIC GRANITE. A partially dressed block, 12x6 x6 inches. Fall River, Mass. From George Wrightson, New York.

6. GRAY GRANITE. A dressed block, of a cubic foot, with one side showing rock fracture. Dix Island, Maine. From Learned & Dickson.

7. GRAY GRANITE. A dressed block, of a cubic foot. Concord, N. H. From the Quincy Railway Granite Company.

8. GRAY GRANITE. A dressed block, of six inches cube, with one side rock fracture. Concord, N. H. From the Quincy Railway Granite Company.

9. GRAY GRANITE. A dressed block, of a cubic foot. Fitzwilliam, N. H. From Runels, Clough & Co.

10. GRAY GRANITE. A ten inch cubic block, with five sides dressed. Berlin, Vt. From M. E. Howard.

11. GRAY GRANITE. A dressed block, of a cubic foot. Barre, Vermont. From J. P. Harrington. (This block, included in the List given in Prof. Hall's *Report on Building Stones*, was subsequently withdrawn by the donor, and sent to New York.)

12. GRAY GRANITE. A dressed block. (A duplicate of No. 11.)

13. GRAY GNEISSOID GRANITE. A dressed block of a cubic foot. Saratoga, N. Y. From J. H. White and Dr. R. L. Allen, of Saratoga Spa.

13ª. GRAY GNEISSOID GRANITE. A partially dressed block of 6x6x2½ inches. Greenfield, N. Y. From Messrs. White and Allen.

13ᵇ. GRAY GNEISSOID GRANITE. A dressed block, of 5½ inches cube. Greenfield, N. Y. From Messrs. White and Allen.

14. DARK COLORED SYENITE. A dressed block, of a cubic foot, with one side rock fracture. Greenfield, N. Y. From Messrs. White and Allen.

14ª. DARK COLORED SYENITE. A dressed six inch cube, polished on three sides. Greenfield, N. Y. From Messrs. White and Allen.

14ᵇ. DARK COLORED SYENITE. A dressed block, 5½x7x4½ inches. Greenfield, N. Y. From Messrs, White and Allen.

15. GRAY GNEISSOID GRANITE. A dressed block, of one foot square by two feet. Luzerne, Saratoga Co., N. Y. From Col. B. C. Butler, Luzerne.

16. GRAY GNEISSOID GRANITE. Several rough blocks from Moreau, N. Y. From W. B. Conant. (Outdoor collection.)

17. GNEISSOID GRANITE. A dressed block, 12x20x24 inches. Luzerne, N. Y. From Dr. R. L. Allen.

18. GNEISSOID GRANITE. A rough block. Butter Hill, Highlands, N. Y. From Hon. A. M. Sherman, Newburgh, N.Y. (This and the above in the outdoor collection.)

19. (Withdrawn from the collection.*)

20. SYENITE. A rough block, about 16x12x3 inches. Warren Co., N. Y. From John Higgins, Troy, N. Y.

67. GRAY GRANITE. A dressed block, 8x6x10½ inches, with one face rock fracture. Concord, N. H. From the Quincy Railway Granite Company.

68. GRAY GRANITE. A partly dressed block, 10x7x2 inches. Fitzwilliam, N. H. Collection of Prof. James Hall.

69. GRAY GRANITE. A dressed block, 6x6x7 inches. Locality and Donor unknown.†

70. GRAY GRANITE. A dressed block, 7½x8x9 inches. Saratoga, N. Y. From Messrs. White and Allen.

72. GRAY GRANITE. A fine-dressed block of one cubic foot, with upper edges beveled. Factory Point, Vt. From Fullerton's Marble and Granite Works.

73. FINE GRAY GRANITE. A dressed block, 11½x10½x28 inches. Clark's Island, Penobscot Bay, Maine. From W. R. Perkins, Agent of the Penobscot Granite Company.

74. COARSE-GRAINED GRANITE. A dressed block, 11x11x22 inches. Prospect, Maine. From W. R. Perkins, Agent.

117. GRAY GRANITE. Four four-inch cubes (marked 117, 117 a, 117 b, 117 c), same as No. 12. Barre, Vt. From J. P Harrington.

118. RED GRANITE. A block, about 15x12x10 inches, with one face polished, two sand-rubbed, and one with natural fracture. Sing Sing, N. Y. From Stanton Cady.

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* This specimen (12x8x2 inches), recorded in the *Report on Building Stones*, as presented by Charles E. Young, of Oswego, N. Y., should have been credited to William Manson, Albany, N. Y., who subsequently withdrew it. Its true source was from a quarry at Bethel, Vt.

† Several specimens from unknown sources are included in the list, which were found in the basement of the Museum without labels at the time the present curator assumed the charge of the collections.

121. GRAY GRANITE. A dressed block, of a cubic foot. Barre, Vt. From J. P. Harrington.

126, 127. GRAY GNEISS. Two blocks, from quarries at Tarrytown, N. Y.

128–130. GRAY GRANITE. Three blocks, from quarries at Blue Hill, Maine.

131–137. SYENITIC GRANITE. Seven blocks, showing varieties, from Staten Island quarries.

138–144. GRAY GRANITE. Seven blocks, showing varieties, from the Quincy Quarry, Mass.

145. DARK GNEISS. A block, from quarry at Kipp's Bay, N. Y.

146. GRAY GNEISS. A block, from quarry at Ravenswood, N. Y.

147, 148. GRAY GRANITE. Two blocks (coarse-grained), from Frankfort, Maine.

149, 150. GRAY GRANITE. Two blocks, from Sullivan, Maine.

151, 152. FINE-GRAINED GRANITE. Two blocks, from Millstone Point, Conn.

153, 154. DARK GRANITE. Two blocks, from Breakneck, N. Y.*

155. GNEISSOID GRANITE. A rough-dressed block, 11x6x5 inches. Monson, Mass. From W. N. Flynt.

156. GRAY GRANITE. A block 6x5½x4 inches, with three sides dressed. Concord, N. H. From the N. Y. State Library.

163. GNEISS. A rough block, 10x11x6 inches. Luzerne, Warren Co., N. Y. From John Higgins, Troy, N. Y.

164. GRAY GRANITE. A block, 10x10½x10 inches, with one face polished, one of rock fracture, and others of different styles of dressing. Below Garrisons, Putnam Co., N. Y. From A. Gracie King.†

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* The above twenty-nine blocks (Nos. 126–154 inc.) are in rough-dressed three inch cubes. They represent the varieties of granite used in the construction of the U. S. Dry Dock at Brooklyn, and were presented by William J. McAlpine, engineer.

† This specimen of granite has been added to the collection while the report is going through the press, and is introduced into the list as a granite worthy of notice. The rock is of a light gray color, comparatively fine grained and breaking with a clean crystalline fracture. In color and texture the specimen is superior to any granite we have seen from the Hudson River Valley.

II. Marbles—Metamorphic.

21. VARIEGATED MARBLE. A block of a cubic foot, with two faces polished, and others sand-rubbed. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[a]. VARIEGATED MARBLE. A dressed block, 12x12x6 inches, with two faces polished. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[b]. VARIEGATED MARBLE. A dressed block, 12x12x6 inches, with two faces polished. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[c]. VARIEGATED MARBLE. A block, 16x15x5 inches, with two faces polished, three faces sand-rubbed, and one rough-dressed. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[d]. VARIEGATED MARBLE. A block, 14x14x8 inches, with face sand-rubbed and moulded, and other faces showing various dressings. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[e]. VARIEGATED MARBLE. A block, 12x11x9 inches, with one face polished, and others showing different dressings and rock fracture. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[f]. VARIEGATED MARBLE. A six inch cube, with two faces polished and the others dressed. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

21[g]. VARIEGATED MARBLE. A six inch cube, with faces as above. Sutherland Falls, Vermont. From the Otter Creek Marble Company.

22. BERKSHIRE SILVER-BLUE MARBLE. A twelve inch cube, variously dressed, and one side polished. Alford, Mass. From the Berkshire Marble Company.

23. WHITE OR SLIGHTLY-CLOUDED MARBLE. A block of a cubic foot, variously dressed and one face polished. Lakeville, Conn. From H. Tudor Brownell.

24. BLUISH OR DOVE-COLORED MARBLE. A block of a cubic foot, with two faces polished, and others with different dressings. Lakeville, Conn. From H. Tudor Brownell.

25. WHITE MARBLE. A block, 10x10x8 inches, with one face polished, and others sand-rubbed. Sheffield, Mass. From Chester Goodale's Quarry. Of the Museum Collections.

26. CLOUDED MARBLE. A block of a cubic foot, with various dressings and one face polished; the same marble used in Girard College. Sheffield, Mass. Quarry of Chester Goodale. Of the Museum Collections.

27. STRIPED MARBLE. A block of a cubic foot, with one side polished and others sand-rubbed. Sheffield, Mass. Quarry of Chester Goodale. Of the Museum Collections.

28. WHITE STATUARY MARBLE. A block of a cubic foot, variously dressed and one face polished. West Rutland, Vt. From Messrs. Sheldon & Slason.

29. STRIPED MARBLE. A block of a cubic foot, with one face polished, one face showing rock-fracture and the others variously dressed. West Rutland, Vermont. From Messrs. Sheldon & Slason.

30. "BROCATELLA MARBLE." A block of a cubic foot, with one face polished, one face showing rock-fracture, and the others variously dressed. West Rutland, Vermont. From Messrs. Sheldon & Slason.

31. MARBLE—"MUDDY LAYER." A block of a cubic foot, dressed as No. 30. West Rutland, Vermont. From Messrs. Sheldon & Slason.

32. STRIPED MARBLE. A block of a cubic foot, dressed as No. 30. West Rutland, Vermont. From Messrs. Sheldon & Slason. These five blocks, Nos. 28 to 32 inc., have each the central portion of one face showing rock-fracture.*

33. WHITE CRYSTALLINE MARBLE. A block of a cubic foot, having one face polished, one showing rock-fracture and the others various dressings. Tuckahoe, N. Y. From Masterton & Hall.

34. WHITE CRYSTALLINE MARBLE. A six-inch cube, with one face polished. Tuckahoe, N. Y. From Masterton & Hall.†

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* Presented by the owners of the quarry, through Mr. W. C. Rowell, of Rutland.
† Missing from the collection.

35. CLOUDED MARBLE. A block 10x7x5 inches, with different dressings, one face rock-fracture and one face polished. South Dover Quarries, Dutchess Co., N. Y. Donor unknown.

36. CLOUDED MARBLE. A dressed block of 8x5x4 inches, with various dressings and rock-fracture. Dutchess Co., N. Y. Donor unknown.

37. CLOUDED MARBLE. A dressed six-inch cube, with one face polished and two faces with rock-fracture. Alford, Mass. From the Berkshire Marble Company.

38. WHITE CRYSTALLINE MARBLE. A block, 12x8x6 inches, of various dressings, with one face polished. Source unknown; probably from Tuckahoe or Hastings, N. Y.

39. WHITE MARBLE. A variously dressed block, 9x9x6 inches. South Dover Quarries, Dutchess Co., N. Y. Donor unknown.

40. WHITE MARBLE. A variously dressed block, 6x6x9 inches. Locality and Donor unknown.

41. WHITE CRYSTALLINE MARBLE. A block 16x12x8 inches, with various dressings and one face polished. State Quarries, Sing Sing, N. Y.

42. GRAY CRYSTALLINE MARBLE. A block of a cubic foot, with various dressings and one face polished. Hastings, N. Y. Of the Museum Collections.

43. WHITE MARBLE. A coarsely crystalline dressed block of ten inches cube, with one face polished and one of rock-fracture. Hastings, N. Y. Of the Museum Collections.

44. GRAY MARBLE. A block 12x12x18 inches, with two sides dressed. Stockbridge, Mass. From Wm. J. McAlpine?

45. SERPENTINE MARBLE. A variously dressed eleven-inch cube, having one face polished. Port Henry, Essex Co., N. Y. From the quarry of Mr. Walton. Museum Collections.

46. SERPENTINE MARBLE. A polished shaft two feet in height, with a base and mouldings of 9x9x15 inches;

upper portion of base polished, lower portion with rock-fracture. Port Henry, N. Y. From —— Sherman.

47. SERPENTINE MARBLE. A rough slab of about 12x18x4 inches. Port Henry, N. Y. Of the Museum Collections.

56. WHITE MARBLE. A rough block, 24x20x12 inches. Lakeville, Conn. From W. R. Smith, Athens, N. Y. (Outdoor Collection.)

92. VERMONT ITALIAN MARBLE. A block, 12x12x13 inches, with one face polished, one with rock-fracture and the others sand-rubbed. East Dorset, Vermont. From the Field Marble Company.

93. CLOUDED MARBLE. A block, 18x14½x9 inches, with moulding and various dressings. Rutland, Vermont. From the North Rutland Marble Company.

94. WHITE MARBLE. An eight-inch cube, variously dressed and with one face polished. Tuckahoe, N. Y. From Masterton & Hall.

111. SERPENTINE MARBLE. A polished, irregular slab, about 30x15 inches. Warrensburgh, N. Y. Of the Geological Survey.

112. SERPENTINE MARBLE. A dressed six-inch cubical block with one face polished. Near Whitehall, N. Y. From E. W. Hall.

116 SERPENTINE MARBLE. A polished shaft, with apex showing natural fracture, 2 feet in height, 7½ inches square at base, and 6 inches at apex. Minerva, Essex Co., N. Y. From O. Richards and D. Lynch, Minerva.

123 SERPENTINE MARBLE. A block, 12x9¾x9¾ inches, with five faces polished and one face dressed. Thurman, Warren Co., N. Y. From the Verd-Antique Marble Company, Saratoga, N. Y.

125 VARIEGATED MARBLE. A polished specimen, 8½x6½ inches, and ¾ inch thick. Swanton Falls, Vermont. From Samuel Goldey.

157. SERPENTINE MARBLE. A block, about 11x9x6 inches, showing sand-rubbed and polished surfaces and rock-fracture. Gouverneur, N. Y. From Daniel Church.

III. Limestones — Non-metamorphic.

48. Gray Limestone. A block of a cubic foot, with various dressings and rock-fracture. Lockport, N. Y. (Niagara Group.) From B. & J. Carpenter.

49. Dark Blue Limestone. A block of a cubic foot, with various dressings, rock-fracture and one face polished. Tribes Hill, N. Y. (Trenton Group.) From James Shanahan.

50. Dark Blue Limestone. A rough-dressed block of a cubic foot. Tribes Hill, N. Y. (Trenton Group.) From James Shanahan.

51. Blue and Variegated Limestone. A block of a cubic foot, with three sides sand-rubbed, the others fine-dressed. Tribes Hill, N. Y. (Trenton Group.) From James Shanahan.

52. Gray Limestone. A dressed block, 14x10½x6 inches. Jacksonburgh, N. Y. (Trenton Group.) From J. Critzer.

53. Dark Blue Limestone (Black Marble). A fine-dressed block of 12x7x6 inches, with one face polished. Cobleskill, N. Y. (Lower Helderberg Group.) From the Howe's Cave Lime and Cement Company.

54. Gray Variegated Limestone (Coral Marble). A polished slab of 8x32 inches. Hudson, N. Y. (Lower Helderberg Group.) From John Higgins.

55. Gray Limestone. A block of nine inches cube, with different dressings and one face polished. Syracuse, N. Y. (Onondaga Limestone.) From J. Hughes.

57. Blue Micaceous Limestone. A rough block of about two-and-a-half feet cube. Barrington, Mass. From Clarkson T. Collins, M. D. (Outdoor Collection.)

95. Gray Limestone. A block of a cubic foot, with various dressings. Prospect, Oneida Co., N. Y. (Trenton Group.) From H. & R. Jones.

96. Gray Limestone. A dressed block, 9x9x13 inches. Willsborough, Essex Co., N. Y. (Trenton Group.) From S. W. Clark, Willsborough.

97. ENCRINAL LIMESTONE. A dressed block of a cubic foot, with one face polished. Lockport, N. Y. (Niagara Group.) From B. & J. Carpenter.

98. GRAY ENCRINAL LIMESTONE. A fine-dressed block of a cubic foot. Lockport, N. Y. (Niagara Group.) From B. & J. Carpenter.

99. ENCRINAL LIMESTONE. A dressed block of a cubic foot, with one face polished. Lockport, N. Y. (Niagara Group.) From B. & J. Carpenter.

100. GRAY ENCRINAL LIMESTONE. A dressed block, 16x13x6 inches. Lockport, N. Y. (Niagara Group.) Of the Geological Survey.

101. GRAY LIMESTONE. A dressed block, 12x12x13 inches, with one face polished, and one of rock-fracture. Onondaga, N. Y. (Upper Helderberg Group.) Purchased for the Museum.

102. GRAY LIMESTONE. A dressed block, 12x12x13 inches, with one face polished, and one of natural fracture. Onondaga, N. Y. (Upper Helderberg Group.) Purchased for the Museum.

103. GRAY LIMESTONE. A dressed block, 9½x10½x8 inches. (Upper Helderberg Group.) Locality and Donor unknown.

104. SCUTELLA LIMESTONE. A block of a triangular face, 10 inch base, 11 inches high, and 6 inches thick, with four faces polished. Hudson, N. Y. (Lower Helderberg Group.) From John Higgins, Troy, N. Y.

105. ENCRINAL LIMESTONE. A dressed block, 18x12x3 inches, with one face polished. Split Rock Quarries, near Syracuse, N. Y. (Onondaga Limestone.) Of the Museum Collections.

106. ENCRINAL LIMESTONE. A dressed block, 18x12x3 inches, with one face polished. Split Rock Quarries. (Onondaga Limestone.) Of the Museum Collections.

107. CHAZY LIMESTONE. A sawed slab, 30x18x2 inches. Isle La Motte, Lake Champlain. Of the Collections of the Geological Survey.

108. GRAY LIMESTONE. An octagonal block of six inches diameter and eight inches high. Jacksonburgh, N. Y. (Trenton Group.) From J. Critzer.

109. GRAY LIMESTONE. A dressed block, 10½x8x8 inches, with one face dressed and the others rock-fracture. (Onondaga Limestone.) Locality and Donor unknown.

110. GRAY LIMESTONE. A dressed block, 12½x7½x5½ inches. Perryville, Madison Co., N. Y. (Onondaga Limestone.) From E. N. Ransom.

122. SCUTELLA LIMESTONE. A polished block of a cubic foot, with central portion of one face fine-dressed. Hudson, N. Y. (Lower Helderberg Group.) From J. P. Berridge, of the Hudson Shell Marble Works.

124. DARK BLUE LIMESTONE. A polished block (Black Marble), 29x7½x13 inches, on a base 34x10x18 inches, of different dressings and natural fracture. Schoharie, N. Y. (Lower Helderberg Group.) From H. R. & Z. J. Brown.

IV. Sandstones.

58. BROWN SANDSTONE. A block with various dressings, 12x12x9 inches. Albion, N. Y. (Medina Sandstone.) From H. J. Sickles.

59. BROWN SANDSTONE. A block of a cubic foot, with various dressings and rock-fracture. Seneca Creek, Maryland. (New Red Sandstone.) From George Wrightson, New York.

60. GRAY SANDSTONE. — Waverley Sandstone. A block of a cubic foot, with five faces sand-rubbed and one face rock-fracture. Plato, Ohio. From B. Clough.

61. GRAY SANDSTONE. — Waverley Sandstone. A dressed block, 12x17x17 inches. Plato, Ohio. From B. Clough.

62. GRAY SANDSTONE. — Waverley Sandstone. A dressed block, 11x11x32 inches. Plato, Ohio. From B. Clough.

63. FINE GRAY SANDSTONE.—Waverley Sandstone. A block of one cubic foot, with various dressings. Columbiana, Ohio. From B. Clough.

64. GRAY SANDSTONE.—Waverley Sandstone. A shaft fifteen inches high and eight inches diameter, surmounted with ornamental work and resting on a base 12x12x6 inches, showing different styles of dressing. Amherst, Ohio. From R. P. Wilson, New York.

65. MALDEN BLUESTONE. A fine-dressed block, of 12x8x5 inches. Malden, N. Y. (Portage Group.) From the Bigelow Bluestone Company.

66. HUDSON RIVER BLUESTONE. A dressed block, of 20x8x7 inches. Schenectady, N. Y. (Hudson River Group.) From Benedict & Gill.

75. BROWN SANDSTONE.—St. Peter's Sandstone. A block, 12x12x14 inches, with various dressings. Bass Island, Lake Superior. From Alanson Sweet.

76. VARIEGATED SANDSTONE. A partly-dressed block, 15x10x13 inches. Medina, N. Y. (Medina Sandstone.) From J. Ryan.

77. GRAY SANDSTONE. A partly-dressed block, 13x11x13 inches. Medina, N. Y. (Medina Sandstone.) From J. Ryan.

78. GRAY SANDSTONE. A dressed block, 11x9x9 inches, with one face rock-fracture. Medina, N. Y. (Medina Sandstone.) From Hon. Ezra Cornell, Ithaca, N. Y.

79. CALCAREOUS SANDSTONE. A block, 13x13x11 inches, with three faces dressed and the others with rock-fracture. Ithaca, N. Y. (Chemung Group.) From Hon. Ezra Cornell.

80. CALCAREOUS SANDSTONE. A rough fossiliferous block, about 19x7x13 inches. Ithaca, N. Y. (Chemung Group.) Of the Museum Collections.

81. BLUESTONE. A rough-dressed block, $17\frac{1}{2}$x10x$10\frac{1}{2}$ inches. Schenectady, N. Y. (Hudson River Group.) Of the Museum Collections.

82. BLUESTONE.—Argillaceous Sandstone. A dressed block, 7x7½x8 inches. East of Malden, N. Y. (Hamilton Group.) From ———?

83. BLUESTONE. A cuneiform dressed block of 6½x8 inches face, 1½ to 4½ inches thick. Schenectady, N. Y. (Hudson River Group.) From J. H. Benedict & Son.

84. GRAY SANDSTONE. A dressed block, 11½x5x6 inches. Near Rondout, N. Y. (Portage Group.) Of the Museum Collections.

85. GRAY SANDSTONE. A rough-dressed block, 20x11x8 inches, with one face natural. Near Lockport, N. Y. (Medina Sandstone.) From ———?

86. GRAY SANDSTONE. A rough-dressed block, 17½x11x6 inches. Keeseville, N. Y.? (Potsdam Sandstone.) From ———?

87. RED SANDSTONE. A block, 12½x10x7 inches, with one face dressed, and the others with rock-fracture. Medina, N. Y. (Medina Sandstone.) From J. Ryan.

88. BROWN SANDSTONE. A block, 9x8x2 inches, with two faces sand-rubbed. Seneca Creek, Md. (New Red Sandstone.) From George Wrightson.

89. BROWN SANDSTONE. A rough-dressed block, 12x6½x3 inches. Bass Island, Lake Superior. (St. Peter's Sandstone.) From Alanson Sweet.

90. RED SANDSTONE. A block, 8x7x6 inches, fine-dressed, with rosette. Herkimer county. (Clinton Group.) From A. C. McGowan.

91. RED SANDSTONE. A dressed block, 13x7x3 inches, with one face rough. Herkimer county. (Clinton Group.) From A. C. McGowan.

119. FINE-GRAINED SANDSTONE. A block, 20x10x5 inches, with one face sand-rubbed, and one with natural fracture. Near Middleburgh, N. Y. (Portage Group.) From John M. Scribner.

120. POTSDAM SANDSTONE. A block, 16x12x12 inches, with four sides dressed, and two of rock-fracture. Potsdam, N. Y. From D. Parmeter.

158. GRAY SANDSTONE. A dressed block, 4x4x6 inches. Amherst, O. From the Clough Stone Company, New York.

159. FREESTONE. A small block, showing mouldings. From Emmett's Quarries, Wyoming Co., N. Y.

160. FINE-GRAINED SANDSTONE. A block, 10½x6x3 inches, sand-rubbed, with edges beveled. Fulton, Schoharie Co., N. Y. (Portage Group.) From John M. Scribner.

161. RED SANDSTONE. A block, 12½x7x6 inches, with six styles of dressing. Fulton, Oswego Co., N. Y. (Medina Sandstone.) From Hon. E. W. Leavenworth, Syracuse, N. Y.

162. GRAY SANDSTONE. A block, 7x6x3 inches, with six styles of dressing. Portage, Livingston Co., N. Y. (Portage Group.) From Hon. E. W. Leavenworth, Syracuse, N. Y.

V. Miscellaneous.

71. SOAPSTONE.— Steatite. A polished ten-inch cube. Francestown, N. H. From the Francestown Soapstone Company.

113. GYPSUM. A rough block, about 14x10x10 inches. Alabaster Bay, Lake Huron, Mich. (Carboniferous System.) From Benj. F. Smith, Jr.

114. GYPSUM. A rough block, about 12x8x9 inches. Locality and Donor as No. 113.

114.[a] GYPSUM. A rough block, about 14x12x7 inches. Locality and Donor as No. 113.

115. GYPSUM. A rough block, about 12x10x9 inches. Locality and Donor as No. 113.

Since the stereotyping of the preceding List, it was discovered, by reference to one of the State Cabinet Reports (8th Ann. Rep., 1855, p. 30), that of the twenty-nine blocks of Granite credited in the List (page 61) to W. J. McAlpine, eight of the blocks, viz.: Nos. 126, 141, 145, 146, 147, 149, 151 and 153, should be credited to Charles Van Benthuysen and John E. Gavit, of Albany.

REPORT OF THE BOTANIST.

S. B. WOOLWORTH, LL.D.,

Secretary of the Board of Regents of the University:

SIR — Since the date of my last report specimens of two hundred and forty-six species of plants have been mounted and placed in the State Herbarium. A list of these is marked (1).

Specimens have been collected in the counties of Albany, Essex, Rensselaer, Hamilton and Sullivan. These represent one hundred and twenty species new to the Herbarium, and one hundred and eighteen species new to the State. Ninety-seven are fungi, of which thirty-nine are considered new or undescribed species. A list of plants collected is marked (2).

Specimens of thirty-one species new to the Herbarium and not among my collections of the past season have been received from correspondents. These were collected in the counties of Dutchess, Erie, Onondaga, Oneida, Saratoga, Ulster, Suffolk and Westchester. If these be added to those of my own collecting, the total number of additions to the Herbarium, the past season, becomes one hundred and fifty-one species. This does not include extra-limital species, specimens of a considerable number of which have been received. A list of contributors and their contributions is marked (3).

A classified statement of New York State species collected and contributed is given below.

PLANTS COLLECTED.	New to the Herbarium.	New to the State.	New to Science.
Flowering Plants	3	1	
Club Mosses	1	1	
Mosses	5	5	
Liverworts	5	5	
Lichens	9	9	
Fungi	97	97	39
	120	118	39
PLANTS CONTRIBUTED.			
Flowering Plants	9	7	
Ferns	2	2	
Mosses	1	1	
Algæ	1	1	
Fungi	18	18	5
	151	147	44

A list of previously unreported species, descriptions of new species, new stations of rare plants, etc., is marked (4).

The plan of making colored sketches of fleshy fungi, as fast as collected, has been continued. Experiments have also been continued with the purpose of increasing the list of species known to be edible. I have no hesitation in adding *Coprinus micaceus* and *Agaricus naucinus* to this list. The former should be taken while young, before the lamellæ have changed to a black color, for this change spoils the attractive character of the dish. This fungus has not the filthy habits of some of its congeners as indicated by the generic name. It grows in tufts or clusters upon decaying wood or stumps. It is not rare even in cities, springing from decaying stumps and roots of shade trees that have been cut down. It has, therefore, the advantage over most others of being procurable in a fresh condition at our very doors. It appears in successive crops in favorable seasons from May to November.

The other species, *A. naucinus*, grows in grassy places and on lawns, and has the advantage of being free from the attack of insects. The presence of insect larvæ detracts

much from the value of many edible fungi, but I have never found them in this species. It is about the same size as the common edible mushroom, *A. campestris*, and not very dissimilar to it in general appearance, but the lamellæ, as well as the rest of the plant, are white, and never have the bright pink color seen in the common mushroom. Its taste, when cooked, is similar to that of *Coprinus comatus*, but its flesh is less tender. It combines beauty and utility in an unusual degree, it being very even and symmetrical in form.

My attention having been directed to the fact that, in some parts of the Great Northern Wilderness, the spruce trees were rapidly dying, to the great pecuniary loss of the lumbermen and land owners, I visited the counties of Hamilton and Essex, partly with the purpose of making some investigations into the nature and cause of the malady. It is said that in some tracts of considerable extent, nearly all the spruce trees are killed, giving to the forest a desolate look and a prevailing brown hue, much as if a fire had run through the woods. I failed to find any of the affected districts, and it is perhaps hardly worth while to speculate concerning the cause of the evil. It may not be out of place, however, to mention three supposable or possible causes, by way of suggesting directions in which those having the opportunity of investigation may look. The three are insects, fungi and drought. It is recorded that considerable tracts of pine forest are sometimes killed by the attacks of multitudes of small coleopterous insects, and it is at least supposable that spruce trees may have a similar foe. Young spruce trees were observed in the town of Keene, which, at a distance, appeared to have their branches terminated by an abundant crop of cones, but, upon a closer observation, the apparent cones proved to be only the dead and discolored tips of the branches. In most cases every leaf upon the affected parts of the branches was dead, and had a gall-like enlargement at its base, evidently the work of some insect. Attacks of this kind, if sufficiently numerous and persistent, would kill the tree.

Fungi sometimes cause the death of trees, but cases of this kind are comparatively rare, and it is not very likely that the destruction of the spruces will be found due to such a cause. An interesting instance of a fungoid malady among them will, however, be noticed presently.

Long continued dry weather may be mentioned as one of the most probable causes. The terrible destruction of coniferous trees, that happened in the winter of 1871 and 1872, is thought by many to be attributable to a lack of the necessary amount of moisture; nor so far as I am informed, did the malady of the spruces in the "North Woods" attract special attention previous to that unfortunate winter. The proportion of deaths is said to be greatest among the trees of low lands; and this is what might be expected, for such trees are generally less vigorous, and therefore less likely to withstand any unfavorable change in their circumstances, and especially a change from their usual abundance of moisture to a scarcity of it. As the miser becomes more miserly by the increase of his hoarded treasures, so the rapid destruction of our forests may be accelerated by nature herself when man becomes too avaricious and too improvident to manifest a just appreciation of the wild woodland, one of nature's choicest gifts.

An interesting instance of the special liability of weak, unthrifty plants to the attacks of parasitic fungi was observed in Essex county. Small sphagnous marshes abound among the Adirondack Mts., and about the shores of many of the small lakes of that region. Upon and about these marshes the spruces are almost always small and starved, or sickly in appearance. The branches are abundant, the lowest, in most cases, springing from the very base of the trunk; but the internodes are short and small, indicating very slow growth and the leaves seldom attain the usual size, or have the dark, green hue of those on more vigorous, healthy plants. The closeness of the "grain," or concentric layers of wood, also indicates extreme slowness of growth, thirty rings in one instance forming a trunk scarcely more than an inch in diameter.

Also on the high summits of the mountains, a similar starved and feeble growth is apparent. The trees become dwarfed, bushy and half prostrate. They cling close to the ground as if seeking shelter from the fierce winds, while their trunks and branches are generally clad with a shaggy coat of lichens, as if some such external protection against the bitter cold of those elevated places were needed. So unlike the ordinary spruce trees do these appear, that any but a close observer might readily be pardoned for doubting if they

really were the same species. Everywhere, upon Nipple Top, Mt. Colvin, Haystack, Skylight, Mt. Marcy and the marshes of the Boreas Ponds, these feeble spruces, struggling for an existence in uncongenial places, were badly infested by a species of rust-fungus, *Peridermium decolorans*, that attacks and discolors the leaves. But nowhere on the lower and drier lands, where the growth of the spruces is more vigorous and healthy, was any evidence of the presence of this fungus visible. It seems to have been unusually abundant the past season, for it was not observed in any of my previous visits to the mountains. So many of the leaves were affected that at a considerable distance the yellowish hue of the foliage was apparent. The effect upon the trees must necessarily be detrimental, but, whether it will prove fatal, future observation must tell.

The bramble rust, *Uredo luminata*, is rapidly becoming a pest to the cultivators of blackberries and raspberries, if we may judge from the numerous complaints of its ravages and the frequent inquiries for a remedy. It is certainly desirable that some one, having facilities for such work, should institute a series of experiments for the purpose of discovering some effective means of counteracting or preventing its injurious attacks. The presence of the fungus can be detected soon after the leaves begin to expand, and it becomes more and more obvious until the whole lower surface of the affected leaf is covered with pale blotches. Soon these are ruptured, revealing the very bright orange-colored dust — the spores of the fungus — which now gives a brilliant hue to the affected surface of the leaf, and is ready for dissemination and the further extension of the mischief. It would therefore be well to employ the remedial agents before the epidermis is ruptured and the spores disseminated.

In consequence of the growing interest in the study of fungi, and the numerous inquiries concerning the best methods of preparing and preserving specimens, it has been thought best to give a few brief hints and suggestions in relation to their collection and preservation. The collector should have a suitable tin box in which to carry his specimens. With care, a little ingenuity in placing specimens in the box, and a few small paper boxes for delicate or fragile species, an ordinary botanical box will answer. A box with partitions, so

arranged that specimens may be kept separate and protected from the injury of mutual pressure, is sometimes recommended. Envelopes or folded paper pockets are convenient for the reception of the minute species that inhabit herb stems, twigs, bark, etc., as much time and labor is saved by keeping each species in a wrapper by itself. Leaf specimens may also be placed in similar wrappers, or in some small portfolio or book that can be conveniently carried. A pocket lens, a stout sharp knife, a lead pencil and a memorandum book should always be carried on collecting excursions. The habitat of every species should be carefully noted, and any new, remarkable or interesting fact be at once entered in the memorandum book. Of the fleshy putrescent fungi, full descriptions of the fresh plant are desirable whenever practicable, unless it be a known species.

Fungi are so diverse in character, that the same mode of treatment is not applicable to all. The fleshy perishable species, such as the Agarici, Boleti, etc., are the most difficult to preserve. The most convenient method of preserving them is by drying; putting them in alcoholic or other preservative solutions being expensive and requiring too much space. They should not at first be placed in a press. They may be exposed to the full rays of the sun, or placed under or near a stove in which a fire is kept burning, but care must be taken not to heat them so much as to discolor them. The best success is generally attained when the process of drying is slow but continuous. It is sometimes better, however, to dry them as rapidly as possible without burning, in order to prevent decomposition and injury from the larvæ of insects. The Coprini or inky fungi, which are especially difficult to dry well, on account of the rapid deliquescence of the lamellæ, are sometimes successfully treated by suspending them in a sunny exposure in the open air. After they have been thoroughly dried, they may, at any convenient time, be exposed to the moist air of a rainy day, dewy night, or damp cellar, until they are flexible enough to be pressed into proper shape to lie well on the herbarium sheets. This slight moisture may be abstracted, and the proper shape made permanent, by placing the specimens in any ordinary plant press for a short time. Fungi of a dry or coriaceous texture may be placed in the plant press without previous drying, but even these often

make better specimens, if treated in the same manner as the fleshy ones. Some Polypori are so hard and tough, that drying under pressure is impracticable. Entire specimens of such should be arranged in drawers or on shelves, but thin vertical and horizontal slices or sections may be placed on the herbarium sheets. It is well to preserve such thin vertical sections of all thick and bulky species, as they serve to show the color and character of the internal substance and of the interior of the stem.

Fungi, parasitic on living plants or their leaves, should be collected and preserved on the plants or leaves they inhabit. These may be dried in the plant press, or, if more convenient, between the leaves of an old book; but it is better to use only just enough pressure to keep the leaves smooth, avoiding the crushing of the parasite if possible.

The very fragile fungi, known as Myxogasters, should never be placed under pressure, not even of the herbarium sheets. Small paper boxes, one-fourth of an inch deep and about three inches long and two wide, are convenient receptacles for these. They may be glued to the herbarium sheets and placed in the herbarium without inconvenience.

The multitudes of Sphæriaceous and other minute fungi that inhabit fallen leaves, dead branches, herb stems, bark and decaying wood, need little or no preparation, except proper trimming of the matrix, so that the specimens shall not be too thick, and shall lie well on the herbarium sheet. In such genera as Diatrype and Valsa, it may be well to trim away a portion of the bark or the covering epidermis, in order to reveal the concealed characters as much as possible. Vertical sections of the larger species of Xylaria and Hypoxylon are desirable. The general rule is to exhibit as many of the specific characters as possible, but, if only a single specimen of a species is possessed, it is better to leave it entire.

It is well to poison all specimens of fungi. The fleshy species, and some of the hard Polypori, are especially liable to be attacked by insects, and, unless poisoned, would be speedily destroyed. They must also be kept in a dry place, or they will soon become moldy.

In mounting specimens, I deem it better, for the sake of uniformity, to use sheets of the ordinary size, even though it is a little more expensive, giving a whole sheet to a species.

This will, in most cases, afford space enough for the exhibition of the various stages and forms of a species. The specimens may be glued to the sheet in the same manner as flowering plants, but leaf specimens are best attached by adhesive strips, as they are apt to separate from the glue or else become broken by the contraction and expansion of the herbarium sheet. Adhesive plaster, used by physicians and surgeons, may be cut into narrow strips and used for this purpose.

If, in all cases of fleshy fungi that change color in drying, as many of them do, a colored sketch of the fresh plant could be attached to the herbarium sheet, it would add much to the value and utility of the collection, but this is only practicable when the requisite time and skill can be commanded. So also, the addition of a magnified sketch of the spores of all species is greatly to be desired, but can only be attained by the use of a compound microscope with the camera lucida.

(1.)

PLANTS MOUNTED.

Reseda luteola *L.*
Medicago sativa *L.*
Desmodium lævigatum *DC.*
Potentilla recta *Willd.*
Heuchera Americana *L.*
Torilis Anthriscus *Gært.*
Helianthus angustifolius *L.*
Hieracium murorum *L.*
Utricularia resupinata *Greene.*
Pycnanthemum pilosum *Nutt.*
Chenopodium polyspermum *L*
Rumex Engelmanni *Ledeb.*
Scirpus debilis *Pursh.*
Rhynchospora nitens *Vahl.*
Agrostis perennans *Tuck.*
Panicum amarum *Ell.*
Andropogon Virginicus *L.*
Asplenium montanum *Willd.*
Chara hispida *L.*
C. Hedwigii *Ag.*
Pannaria lurida *Mont.*
P. Guepini *Delis.*
P. rubiginosa *Ach.*
Collema tenax *Sw.*
C. cladodes *Tuck.*
Physcia cil. v. angustata *Tuck*
Gyalecta Pineti *Schrad.*
Stereocaulon condensatum.
Biatora rivulosa *Ach.*
B. Russellii *Tuck.*
Buellia turgescens *Nyl.*
Lecanactis pr. v. chloroconia.
Staurothele circinata *Tuck.*
Arthonia lecideëlla *Nyl.*
Verrucaria pinguicula *Mass.*
V. pyrenophora *Ach.*
V. rupestris *Schrad.*
V. papillosa *Ach.*
Stigonema coloratum *Ag.*
Ectocarpus aureus *Lyngb.*

Agaricus Friesii *Lasch.*
A. fuscosquameus *Pk.*
A. felinus *Pers.*
A. oblitus *Pk.*
A. ponderosus *Pk.*
A. rubicundus *Pk.*
A. flavescens *Pk.*
A. lacunosus *Pk.*
A. laterarius *Pk.*
A. Limonium *Pk.*
A. leucocephalus *Krbh.*
A. fumidellus *Pk.*
A. thujinus *Pk.*
A. Hebeloma *Pk.*
A. connexus *Pk.*
A. albissimus *Pk.*
A. maculosus *Pk.*
A. Truncicola *Pk.*
A. subzonalis *Pk.*
A. Gerardianus *Pk.*
A. niger *Schw.*
A. conigenus *Pers.*
A. coloreus *Pk.*
A. miratus *Pk.*
A. echinipes *Lasch.*
A. rugosodiscus *Pk.*
A. cyaneus *Pk.*
A. byssisedus *Pers.*
A. foliomarginatus *Pk.*
A. fuscofolius *Pk.*
A. Herbarum *Pk.*
A. nephrodes *B. & C.*
A. fulvotomentosus *Pk.*
A. cerasinus *Pk.*
A. stellatosporus *Pk.*
A. griseoscabrosus *Pk.*
A. bellulus *Pk.*
A. geminellus *Pk.*
A. discomorbidus *Pk.*
A. expansus *Pk.*

Agaricus callistus *Pk.*
A. coprinoides *Pk.*
A. diminutivus *Pk.*
A. Howeanus *Pk.*
A. phyllogenus *Pk.*
Coprinus insignis *Pk.*
C. angulatus *Pk.*
Cortinarius sphærosporus *Pk.*
C. longipes *Pk.*
C. claricolor *Fr.*
C. porphyropus *A. & S.*
C. lilacinus *Pk.*
C. Clintonianus *Pk.*
C. modestus *Pk.*
C. lignarius *Pk.*
C. torvus *Fr.*
C. nigrellus *Pk.*
C. pulcher *Pk.*
Lepista cinerascens *Bull.*
Paxillus strigosus *Pk.*
Hygrophorus purus *Pk.*
H. eburneus *Bull.*
H. Cossus *Fr.*
H. virgatulus *Pk.*
H. borealis *Pk.*
Lactarius regalis *Pk.*
L. Gerardii *Pk.*
Russula sordida *Pk.*
R. consobrina *Fr.*
Nyctalis asterophora *Fr.*
Marasmius cæspitosus *Pk.*
M. Viticola *B. & C.*
M. glabellus *Pk.*
M. longipes *Pk.*
M. straminipes *Pk.*
Panus strigosus *B. & C.*
Lenzites vialis *Pk.*
Boletus piperatus *Bull.*
B. chrysenteron *Fr.*
B. pallidus *Frost.*

Boletus ampliporus *Pk.*
Polyporus cæruleoporus *Pk.*
P. griseus *Pk.*
P. flavidus *Pk.*
P. splendens *Pk.*
P. humilis *Pk.*
P. rhipidius *Berk.*
P. maculatus *Pk.*
P. aurantiacus *Pk.*
P. conchifer *Schw.*
P. ferruginosus *Fr.*
P. sanguinolentus *Fr.*
P. attenuatus *Pk.*
P. Gordoniensis *B. & Br.*
P. Armeniacus *Fr.*
Cyclomyces Greeni *Berk.*
Hexagona carbonaria *B. & C.*
Sistotrema confluens *Pers.*
Hydnum confluens *Pk.*
H. sulphureum *Schw.*
H. ferruginosum *Fr.*
Grandinia coriaria *Pk.*
Thelephora Willeyi *Clinton.*
Stereum tenerrimum *B. & R.*
S. radiatum *Pk.*
Corticium leucothrix *B. & C.*
C. bicolor *Pk.*
Clavaria fistulosa *Fr.*
Exobasidium Azaleæ *Pk.*
E. Andromedæ *Pk.*
Lycoperdon pedicellatum *Pk.*
Æthalium Ferrincola *Schw.*
Spumaria alba *DC.*
Licea cylindrica *Fr.*
Stemonitis typhoides *DC.*
S. herbatica *Pk.*
Arcyria incarnata *Pers.*
A. nutans *Fr.*
A. globosa *Schw.*
Didymium furfuraceum *Fr.*
Didymium farinaceum *Fr.*
D. connatum *Pk.*
Diderma crustaceum *Pk.*
D. farinaceum *Pk.*
D. Mariæ-Wilsoni *Clinton.*
Trichia reniformis *Pk.*
Physarum pulcherripes *Pk.*
Angioridium sinuosum *Grev.*
Perichæna flavida *Pk.*
Licea cæspitosa *Pk.*
Craterium leucocephalum.
C. obovatum *Pk.*
Diplodia vulgaris *Lev.*
Excipula Equiseti *Pk.*
Dinemasporium Robiniæ *Ger.*
D. acerinum *Pk.*
Hendersonia Robiniæ *West.*
Pestalozzia pezizoides *De Not.*
Bactridium Ellisii *Berk.*
Puccinia Lobeliæ *Gerard.*
P. curtipes *Howe.*
Æcidium Lycopi *Gerard.*
Æ. Uvulariatum *Schw.*
Æ. Hydrophylli *Pk.*
Ceratium hydnoides *A. & S.*
C. porioides *A. & S.*
Stilbum ramosum *Pk.*
Helicoma Mulleri *Cd.*
Oidium fulvum *Lk.*
O. megalosporum *B. & C.*
Fusisporium roseolum *Steph.*
Pilacre Petersii *B. & C.*
Erysiphe Euphorbiæ *Pk.*
Peziza violacea *Pers.*
P. subochracea *C. & P.*
P. lacerata *C. & P.*
P. crocitincta *B. & C.*
P. albumina *C. & P.*
P. corrugata *C. & P.*
P. coronata *Bull.*

Peziza Dehnii *Rabh.*
Helotium rugipes *Pk.*
H. macrosporum *Pk.*
H. thujinum *Pk.*
H. gracile *C. & P.*
H. Limonium *C. & P.*
Hysterium typhinum *Fr.*
H. sphærioides *A. & S.*
H. maculare *Fr.*
H. macrosporum *Pk.*
Torrubia capitata *Fr.*
Hypocrea alutacea *Fr.*
Nectria Ribis *Tode.*
N. Celastri *Schw.*
N. ochracea *Fr.*
N. balsamea *C. & P.*
N. Apocyni *Pk.*
N. mycetophila *Pk.*
Elaphomyces variegatus *Vitt.*
Xylaria grandis *Pk.*
Hypoxylon perforatum *Schw.*
H. rubiginosum *Fr.*
Diatrype moroides *C. & P.*
D. bullata *Fr.*
D. adusta *C. & P.*
D. atropunctata *Schw.*
D. quercina *Tul.*
Valsa bicincta *C. & P.*
V. centripeta *Fr.*
V. profusa *Fr.*
V. hapalocystis *B. & Br.*
Massaria Argus *Tul.*
Eutypa Acharii *Tul.*
Lophiostoma magnata *C. & P.*
L. turrita *C. & P.*
Sphæria viridicoma *C. & P.*
S. fuscella *B. & Br.*
S. Semen *C. & P.*
S. mutans *C. & P.*
S. subconica *C. & P.*
S. Sarmentorum *Fr.*
S. Staphyleæ *Pk.*
S. Desmodii *Pk.*

(2.)

PLANTS COLLECTED.

Polygonum Hartwrightii *Gr.*
Lycopodium sabinæfolium.
Thelia Lescurii *Sulliv.*
Hypnum Oakesii *Sulliv.*
H. exannulatum *Gumb.*
H. cupressiforme *L.*
H. acutum *Mitt.*
Sphagnœcetis Hubeneriana,
Jungermannia albescens *Hook.*
J. ventricosa *Dicks.*
Scapania undulata *N. & M.*
Frullania Oakesiana *Aust.*
Cetraria Fahlunensis *Schær.*
Lecanora badia *Fr.*
Cladonia deformis *Hoffm.*
C. papillaria *Hoffm.*
Bæomyces byssoides *Fr.*
Biatora milliaria *Fr.*
Lecidea arctica *Smf.*
L. Diapensiæ *Th. Fr.*
L. melancheima *Tuck.*
Agaricus fumosoluteus *Pk.*

Agaricus rosellus *Fr.*
A. atroalboides *Pk.*
A. constans *Pk.*
A. delectabilis *Pk.*
A. Acicula *Schœff.*
A. galopus *Schrad.*
A. montanus *Pk.*
A. Rhododendri *Pk.*
A. luteofolius *Pk.*
A. infidus *Pk.*
A. fuscodiscus *Pk.*
A. fragilior *Pk.*
A. chimonophilus *B. & Br.*
Coprinus aquatilis *Pk.*
Cortinarius fuscoviolaceus *Pk.*
Hygrophorus aurantiacoluteus
Gomphidius stillatus *Strauss.*
Lactarius alpinus *Pk.*
Marasmius minutus *Pk.*
M. minutissimus *Pk.*
Panus operculatus *B. & C.*
Polyporus squamosus *Fr.*
P. spumeus *Fr.*
P. volvatus *Pk.*
P. nigricans *Fr.*
P. conchatus *Fr.*
P. Pinicola *Fr.*
P. vulgaris *Fr.*
P. incarnatus *Fr.*
Trametes odoratus *Fr.*
Merulius porinoides *Fr.*
Irpex lacteus *Fr.*
Stereum balsameum *Pk.*
S. versiforme *B. & C.*
Corticium calceum *Fr.*
C. cremoricolor *B. & C.*
C. lilacinofuscum *B. & C.*
Cyphella candida *Pk.*
Clavaria spathulata *Pk.*
Typhula gyrans *Fr.*
Typhula filicina *Pk.*
Tremella enata *B. & C.*
T. stipitata *Pk.*
Dacrymyces fragiformis *Nees.*
Ditiola radicata *Fr.*
Reticularia umbrina *Fr.*
Diderma umbilicatum *Pers.*
Phoma ellipticum *Pk.*
Pestalozzia Mariæ *Clinton.*
Coryneum triseptatum *Pk.*
Spilocæa concentrica *Schw.*
Helicosporium olivaceum *Pk.*
H. ellipticum *Pk.*
Ustilago Syntherismæ *Schw.*
Uredo Empetri *DC.*
Peridermium elatinum *A. & S.*
P. balsameum *Pk.*
P. decolorans *Pk.*
Pterula setosa *Pk.*
Cladosporium Lignicola *Cd.*
Oidium corticale *Pk.*
Fusidium flavovirens *Fr.*
Monilia candida *Pk.*
Pilobolus crystallinus *Tode.*
Chætomium melioloides *C. & P.*
Helvella sphærospora *Pk.*
Mitrula cucullata *Fr.*
M. inflata *Schw.*
Peziza adusta *C. & P.*
P. subcarnea *C. & P.*
Ascobolus pilosus *Fr.*
Helotium aciculare *Fr.*
H. fastidiosum *Pk.*
Tympanis Fraxini *Schw.*
Hysterium tumida *Duby.*
H. xylomoides *Chev.*
H. Rhododendri *Schw.*
Rhytisma monogramma *B. & C.*
Torrubia entomorrhiza *Fr.*
Epichloe Hypoxylon *Pk.*

Nectria episphæria *Fr.*
Dothidea Dalibardæ *Pk.*
Diatrype platasca *Pk.*
D. corniculata *Ehrh.*
Valsa impulsa *C. & P.*
V. subclypeata *C. & P.*
V. Peckii *Howe.*
Lophiostoma sexnucleata *Ck.*
Sphæria lagenaria *Pers.*
S. orthogramma *B. & C.*
S. thujina *Pk.*
S. Parnassiæ *Pk.*
S. Arceuthobii *Pk.*

(3.)

CONTRIBUTORS AND THEIR CONTRIBUTIONS.

Miss S. P. Monk, Santa Barbara, Cal.

Evernia vulpina *Wulf.*

Mrs. E. E. Atwater, Chicago, Ill.

Viola lanceolata *L.*
V. primulæfolia *L.*
V. cucullata *L.*
Argemone Mexicana *L.*
Pinguicula pumila *Mx.*
Gelsemium sempervirens *Ait.*
Polypodium incanum *Sw.*
Aspidium patens *Sw.*
Evernia vulpina *Wulf.*

Miss M. L. Wilson, Buffalo, N.Y.

Chondria intertexta *Chauv.*
C. pinn. *v.* osmunda *Ag.*
Gigartina acicularis *Wulf.*
G. mamillosa *G. & W.*
Sphærococcus coronopifolius.
S. cor. *v.* clavatus *Ag.*
Schizymena Dubyi *Chauv.*
Rhodymena palmetta *Grev.*
R. pal. *v.* Sarniensis *Grev.*
Dasya coccinea *Huds.*
Delesseria ruscifolia *Lam.*
Polysiphonia byssoidea *Grev.*
Callithamnion Rothii *Lyngb.*
Callithamnion Daviesii *Ag.*
C. Turneri *Ag.*
C. tetricum *Dill.*
C. roseum *Sm.*
C. tetragonum *Ag.*
Ceramium ciliatum *Ellis.*
C. Delongchampii *Chauv.*
Lomentaria ovalis *Huds.*
Pycnophytus tuberculatus.
Cystoseira siliquosa *Ag.*
C. ericoides *G. & W.*
Calliblepharis ciliata *Kutz.*
C. jubata *Kutz.*

Corynospora pedicellata *J. Ag.*
Bangia Ceramicola *Chauv.*
Codium Bursa *L.*
C. tomentosum *Ag.*
Ulva bullosa *Roth.*
Tetraspora lubrica *Ag.*
Chætomorpha area *Dill.*
Lemanea torulosa *Ag.*
Batrachospermum vagum.

Rev. A. P. Van Gieson, Poughkeepsie, N. Y.

Aconitum Napellus *L.*

Rev. H. Wibbe, Oswego, N. Y.

Ammannia humilis *Mx.*
Zygadenus glaucus *Nutt.*
Tofieldia glutinosa *Willd.*

Prof. P. A. Puissant, Troy, N. Y.

Verbena bracteosa *Mx.*

E. Hunt, Utica, N. Y.

Botrychium matricariæfolium *Braun.*

E. W. Mundy, Syracuse, N. Y.

Botrychium Lunaria *Sw.*

H. Gillman, Detroit, Mich.

Parnassia parviflora *DC.*
Abies balsamea *Marshall.*
Botrychium Lunaria *Sw.*

A. H. Curtiss, Liberty, Va.

Sedum Nevii *Gr.*
Galium anglicum *Huds.*
Arceuthobium campylopodum *Engelm.*

E. C. Howe, M. D., Yonkers, N. Y.

Puccinia curtipes *Howe.*
Uromyces Phaseoli *Strauss.*
Dothidea tetraspora *Fr.*

H. W. Young, Aquebogue, N. Y.

Solidago elliptica *Ait.*
S. cæs. *v.* albiflora *Young.*
Callitriche heterophylla *Ph.*
Polygonum Careyi *Olney.*
Rumex Engèlmanni *Ledeb.*
Scirpus Olneyi *Gr.*
Carex striata *Mx.*
C. sterilis *Willd.*
Agrostis alba *L.*

I. C. MARTINDALE, Camden, N. J.

Protomyces Martindalei *Pk.*

Prof. G. H. FRENCH, Irvington, Ill.

Fragaria Vir. *v.* Illinœnsis *Gr.*
Saxifraga Forbesii *Vasey.*
Heuchera Rugellii *Shutt.*
Dodecatheon Mea. *v.* Frenchii *Vasey.*
Phlox stellaria *Gr.*
Cheilanthes vestita *Sw.*
Pellæa atropurpurea *Lk.*
Asplenium pinnatifidum *Nutt.*

W. R. GERARD, Poughkeepsie, N. Y.

Polyporus cupulæformis.
Discosia maculæcola *Gerard.*
Septoria Verbenæ *D & R.*
S. Hepaticæ *Desm.*
S. Tiliæ *West.*
S. Acericola *Desm.*
Phyllosticta Cytisi *Desm.*
P. vulgaris *Desm.*
Diplodia Fibricola *Berk.*
D. juglandina *Fr.*
Ascochyta Medicaginis *Fckl.*
Glæosporium Juglandis *Lib.*
Melanconium juglandinum
Phragmidium effusum *Fckl.*
Puccinia Cirsii *Lasch.*
P. obtusa *Schl.*
P. obtegens *Tul.*
P. Pimpinellæ *Lk.*
P. Bardanæ *Cd.*
P. Ægopodii *Lk.*
Uromyces Genistæ *Fckl.*
Cystopus cubicus *Lev.*
Peridermium Pini *Chev.*
Rœstelia cornuta *Tul.*
Æcidium Taraxaci *Kz.*
Æ. Centaureæ *DC.*
Peronospora sordida *Berk.*
P. Urticæ *Casp.*
P. Bistortæ *Fckl.*
P. ovata *Fckl.*
Sporotrichum densum *Lk.*
Erysiphe Linkii *Lev.*
E. Umbelliferarum *De By.*
E. tortilis *Lk.*
Microsphæra holosericea *Lev.*
Rhytisma salicinum *Fr.*
R. umbonatum *Fr.*
Psilospora faginea *Rabh.*
Dothidea Ulmi *Fr.*
Valsa nivea *Fr.*
Sphærella sparsa *Awd.*
S. maculæformis *Pers.*
S. perexigua *Fckl.*

E. S. MILLER, Wading River, N. Y.

Ptelea trifoliata *L.*
Euphorbia Cyperissias *L.*
Scirpus Olneyi *Gr.*
Cyperus Michauxianus *Schul.*
Agrostis alba *L.*
Onoclea sensibilis *L.*

J. S. MERRIAM New York, N. Y.

Uredo Ledicola *Pk.*

GEO. VASEY, M. D., Washington, D. C.

Æcidium Cressæ *DC.*

S. WATSON, Cambridge, Mass.

Peridermium decolorans *Pk.*

J. M. COULTER, Washington, D. C.

Puccinia Porteri *Pk.*
Peziza vulcanalis *Pk.*
Sphæria Coulteri *Pk.*

J. B. ELLIS, Newfield, N. J.

Paxillus flavidus *Berk.*
Boletus Russellii *Frost.*
Rœstelia transformans *Ellis.*
Hysterium rufescens *Schw.*

C. C. PARRY, M. D., Davenport, Iowa.

Æcidium Psoraleæ *Pk.*
Æ. Parryi *Pk.*
Dothidea Gramma *Schw.*

C. C. FROST, Brattleboro' Vt.

Boletus Frostii *Russell.*
B. Russellii *Frost.*
B. Spraguei *Frost.*
B. robustus *Frost.*
B. speciosus *Frost.*
B. miniato-olivaceus *Frost.*
B. pallidus *Frost.*
B. sordidus *Frost.*
B. chromapes *Frost.*
B. subchromeus *Frost.*
B. rubeus *Frost.*
B. Roxanæ *Frost.*
Boletus pictus *Pk.*
B. auriporous *Pk.*
B. flavidus *Fr.*
B. luteus *L.*
B. edulis *L.*
B. piperatus *Bull.*
B. felleus *Fr.*
B. collinitus *Fr.*
B. spadiceus *Fr.*
B. cyanescens *Bull.*
B. strobiliformis *Scop.*
Polyporus cæruleoporous *Pk.*

R. P. WHITFIELD, Albany, N. Y.

Trichomanes radicans *Swartz.*

E. L. HANKENSON, Newark, N. Y.

Polygonum Hartwrightii *Gr.*

Hon. H. SEYMOUR, Utica, N. Y.

Polyporus sulfureus *Fr.*
P. sanguineus *Fr.*
Polyporus Curtisii *Berk.*
Morchella esc. *v.* conica *Fr.*

Hon. G. W. CLINTON, Buffalo, N. Y.

Antitrichia Californica *Sulliv.*
A. curtipendula *Brid.*
Leskea Austinii *Sulliv.*
Neckera Douglassii *Hook.*
Hypnum crispifolium *Hook.*
H. Oreganum *Sulliv.*
H. myosuroides *L.*
H. lutescens *Dill.*
Porphrydium cruentum *Ag.*
Agaricus cepæstipes *Sow.*
Lenzites striata *Sw.*
Merulius bellus *B. & C.*
Ditiola radicata *Fr.*
Trametes hydnoides *Fr.*
Polyporus sanguineus *L.*
P. incarnatus *Fr.*
P. Salviæ *B. & C.*
Phoma Syringæ *B. & C.*
Pestalozzia Mariæ *Clinton.*
Puccinia Veratri *Clinton.*
Ustilago Erythronii *Clinton.*
Uromyces Lilii *Clinton.*
Uredo Smilacis *Schw.*
Æcidium dubium *Clinton.*
Sporidesmium concinnum.
Cladosporium Typhæ *Schw.*
Hypomyces aurantius *Tul.*

(4.)

PLANTS FOUND GROWING SPONTANEOUSLY IN THE STATE AND NOT BEFORE REPORTED.

ACONITUM NAPELLUS *L.*

Along the upper waters of the Beaver Kill, Ulster county. *Rev. A. P. Van Gieson.*

The specimens show a loose paniculate inflorescence quite unlike the ordinary form seen in gardens. The flowers are few and on widely diverging slender branches, and the leaves are not as finely dissected as usual. The plants were found in a wild unsettled region far from any present habitation, though the Rev. Mr. Van Gieson writes me that many years ago, thirty to fifty, a family settled in this part of the valley of the stream. Though their stay was short, he suggests this settlement as a possible explanation to the introduction of the plant into this singular locality. Its modified character may perhaps be due to the fact that it was left to run wild in a not very congenial locality. And yet it is a little remarkable that a plant rarely found with us "shifting for itself," should be so thoroughly naturalized in this remote spot. It is desirable that its history and character should be further investigated.

VERBENA BRACTEOSA *Mx.*

Waste grounds. West Troy. *P. A. Puissant.* Doubtless introduced from the west.

SOLIDAGO ELLIPTICA *Ait.*

Black Brook, Long Island. *H. W. Young.*

POLYGONUM HARTWRIGHTII *Gr.*

Newark. *E. L. Hankenson.* Bethlehem. If this species is rightly understood by me it is not rare on the Cayuga marshes, but is seldom found in flower. In the younger plants the spreading foliaceous tips of the sheaths are conspicuous.

EUPHORBIA CYPARISSIAS *L.*

Wading River. Long Island. *E. S. Miller.*

SCIRPUS OLNEYI *Gr.*

Salt marshes, Aquebogue and Wading River. *Young, Miller.*

CAREX STRIATA *Mx.*

Bogs near Riverhead, L. I. *Young.* The plant referred to this species in New York State Flora is believed to be *C. polymorpha* Muhl.

BOTRYCHIUM LUNARIA *Swartz.*

Near Syracuse. *E. W. Mundy.*

This is a very interesting addition to our list of ferns, and indicates the varied and comprehensive character of our flora. The single specimen sent by Mr. Mundy does not differ in any essential respect from specimens of this species received from the Lake Superior region, hitherto its only reported locality in this country. A specimen of Botrychium received from Mr. Cowles, and unhesitatingly considered the large form of *B. simplex* as described in Paine's Catalogue of Oneida County Plants, might, with almost equal propriety, be deemed a small form of this species. It would be remarkable if the two species should be found to run together.

BOTRYCHIUM MATRICARIÆFOLIUM *Braun.*

Deerfield, Oneida county. *E. Hunt.*

LYCOPODIUM SABINÆFOLIUM *Willd.*

Elevated marshes near Nipple Top and on the slope of Mt. Marcy.

This plant is regarded by some as a variety of *L. compla-*

natum, but our specimens are so very dissimilar to typical forms of that species that I am disposed at present to keep them distinct. The spikes in our specimens are sometimes sessile, sometimes on a short bracted peduncle, which is apparently produced by a slight elongation of the rachis, together with a failure of the thecæ to develop in the axils of the lower bracts or scales. The fertile branches are frequently longer than the sterile and sometimes less densely clothed with leaves. They are usually forked near the top, each branch bearing a single spike. There is no apparent tendency either in these or in the sterile branches to become flattened, as in *L. complanatum*.

THELIA LESCURII *Sulliv.*

Dry rocky soil. Port Jervis, Sullivan county. Sterile.

LESKEA AUSTINI *Sulliv.*

Trunks of trees. Saratoga. *Hon. G. W. Clinton.* Sterile.

HYPNUM OAKESII *Sulliv.*

Summit of Haystack Mt. This mountain stands next to Mt. Marcy on the east, and, though not as high as its more renowned neighbor, it afforded several species of plants not yet found on that lofty summit.

HYPNUM EXANNULATUM *Gumb.*

Wet places. Catskill and Adirondack Mts. Sterile.

In Hobkirk's Synopsis of British Mosses, this is given as synonymous with *H. aduncum* Dill., *H. aduncum* Hedw. being referred to *H. Kneiffii* B. & S.

HYPNUM CUPRESSIFORME *L.*

Port Jervis and Helderberg Mts. Sterile.

HYPNUM ACUTUM *Mitt.*

Wooded swamps. Sandlake. Rare. Oct.

SPHAGNŒCETIS HUBENERIANA *Rabh.*

Adirondack Mts. and Center.

JUNGERMANNIA ALBESCENS *Hook.*

Adirondack Mts.

JUNGERMANNIA VENTRICOSA *Dicks.*

Adirondack Mts.

SCAPANIA UNDULATA *N. & M.*
Water holes in marshy places. Adirondack Mts.

FRULLANIA OAKESIANA *Aust.*
Trunks of balsam trees. Adirondack Mts.

CETRARIA FAHLUNENSIS *Schær.*
Rocks. Mt. Colvin.

LECANORA BADIA *Fr.*
Rocks on the high summits of the Adirondacks.

CLADONIA DEFORMIS *Hoffm.*
Dry pastures. Indian Lake. Sterile.

CLADONIA PAPILLARIA *Hoffm.*
Summit of Skylight Mt. Also on the Catskills.

BÆOMYCES BYSSOIDES *Fr.*
Rocks along mountain streams. Adirondack Mts.

BIATORA MILLIARIA *Fr.*
High summits of the Adirondack Mts.

LECIDEA ARCTICA *Smf.*
Summit of Mt. Marcy; incrusting mosses, etc. The specimens are imperfect, and, perhaps, entitled to some doubt.

LECIDEA DIAPENSIÆ *Th. Fr.*
Summit of Mt. Marcy, on Diapensia sods.

LECIDEA MELANCHEIMA *Tuck.*
Old fence rails. Sandlake.

PORPHRYDIUM CRUENTUM *Ag.*
Ground in a conservatory. Buffalo. *Clinton.*

AGARICUS CEPÆSTIPES *Sow.*
Greenhouse. Buffalo. *Clinton.*

AGARICUS (TRICHOLOMA) FUMOSOLUTEUS *n. sp.*
Pileus fleshy, convex or expanded, smooth, moist, smoky-yellow; lamellæ broad, close, rounded behind and deeply

emarginate, white; stem stout, smooth, hollow, white; spores subglobose, .00018′–.0002′ in diameter.

Plant 3′–4′ high, pileus 2′–3′ broad, stem 4″–6″ thick.

Ground in woods. Forestburgh, Sullivan county. Sept.

When cut, the flesh has a farinaceous odor. The plant sometimes grows in tufts. In size and general character it is related to *A. virescens*.

AGARICUS ROSELLUS *Fr.*

Hemlock woods. Forestburgh. Sept.

AGARICUS (MYCENA) ATROALBOIDES *n. sp.*

Pileus campanulate, obtuse or subumbonate, striate on the margin; at first blackish-brown with a slight pruinosity, then fading to cinereous on the margin; lamellæ close, narrow ascending, uncinate with a decurrrent tooth, white or cinereous; stem long, smooth, equal, colored like the pileus, villous at the base; spores with a slight apiculus at one end, elliptical, .0003′ long.

Plant 3′–4′ high, pileus 4″–6″ broad, stem .5″–1″ thick.

Wet places among mosses in woods. Forestburgh. Sept.

The stem in the younger plants is darker toward the top.

The lamellæ are not free, and the stem is not thickened at the base as in *A. atroalbus*.

There is a slender variety in which the umbo becomes whitish in drying.

AGARICUS (MYCENA) CONSTANS *n. sp.*

Pileus submembranaceous, campanulate or convex, striate, pale-cinereous; lamellæ close, ascending, uncinate, white; stem slender, equal, smooth, colored like the pileus, with hairy filaments at the base; odor alkaline.

Plant about 2′ high, pileus 1″–3″ broad.

Among mosses in woods. Forestburgh. Sept.

In general appearance it bears some resemblance to small forms of *A. vulgaris*, but it is easily separated by its dry stem and its odor of hartshorn which is very distinct when the plant is first gathered.

AGARICUS (MYCENA) DELECTABILIS *n. sp.*

White; pileus thin, conical, subacute, striate; lamellæ close, arcuate-decurrent; stem slender, equal, smooth, with hairy filaments at the base; odor alkaline.

Locality, size and habitat as in the preceding species, from which it is separated by its white color, more conical pileus and decurrent lamellæ. (Plate 1, figs. 22–25.)

AGARICUS ACICULA *Schaeff.*

Damp places on leaves and twigs. Indian Lake. July.

AGARICUS GALOPUS *Schrad.*

Among fallen leaves in woods. Forestburgh. Sept.
Easily known by the milky juice of the stem.

AGARICUS (OMPHALIA) MONTANUS *n. sp.*

Blackish-brown; pileus thin, umbilicate, smooth; lamellæ distant, decurrent, the edge darker; stem equal, smooth.

Plant about 1′ high, pileus 6″–8″ broad.

Thin soil covering rocks. Summit of Mt. Marcy. Aug.

AGARICUS (OMPHALIA) RHODODENDRI *n. sp.*

White, slightly viscid when moist; pileus convex, glabrous, umbilicate, striate on the margin; lamellae arcuate-decurrent, rather close, beaded on the edge; stem slender, rough with minute white gland-like protuberances.

Plant 6″–8″ high, pileus 1″–2″ broad.

Dead trunks of *Rhododendron maximum.* Forestburgh. Sept. (Plate 2, figs 15–19.)

The peculiar roughness of the stem is a marked feature of this small species.

AGARICUS (PHOLIOTA) LUTEOFOLIUS *n. sp.*

Pileus firm, convex, dry, squamulose, fibrillose on the margin, pale red or yellowish; lamellæ broad, sub-distant, emarginate, serrate on the edge, yellow becoming bright-ferruginous; stem firm, fibrillose, solid, colored like the pileus, often curved from the place of growth; annulus obsolete; spores bright-ferruginous, .00028′ long, .00016′ broad.

Plant subcæspitose, 2′–3′ high, pileus 1′–2′ broad, stem 3″–5″ thick.

Trunks of birch trees. Forestburgh. Sept.

The general appearance of this plant is like *A. variegatus* or reddish forms of *A. multipunctus.* The reddish color appears sometimes to fade with age.

AGARICUS (HEBELOMA) INFIDUS *n. sp.*

Pileus firm, campanulate or expanded, subumbonate, slightly squamulose on the disk, often split on the margin, whitish, lamellæ close, pallid becoming cinnamon-brown; stem equal or slightly bulbous-thickened at the base, minutely furfuraceous, hollow, colored like the pileus; spores globose, rough with little nodules, .0003′ in diameter.

Plant about 2′ high, pileus 6″–12″ broad, stem 1″–2″ thick.

Mossy ground in swampy woods. Adirondack Mts. Sept.

This species bears some resemblance to *A. geophyllus*, but the slightly squamulose pileus and the rough spores readily separate it. The margin of the pileus is sometimes deeply split, the radiating lobes giving a stellate appearance to the pileus.

AGARICUS (HEBELOMA) FUSCODISCUS *n. sp.*

Pileus at first subviscid, conical, covered with blackish-brown fibrils, then campanulate or expanded, umbonate, whitish, the disk remaining blackish-brown; lamellæ close, whitish then brownish, minutely rough on the edge; stem equal, solid, whitish and pruinose at the top, elsewhere brownish, fibrillose; spores .00035′ long, .00018′ broad.

Plant 1′–3′ high, pileus 6″–12″ broad, stem 1″–2″ thick.

In an old pasture under trees. Forestburgh. Sept. (Plate 1, figs. 3–6.)

The somewhat viscid pellicle is separable. The odor resembles that of chestnut blossoms.

AGARICUS (HEBELOMA) FRAGILIOR *n. sp.*

Small, fragile, pale grayish ochre; pileus thin, convex, then expanded or centrally depressed, sometimes irregular or wavy on the margin, at first minutely squamulose lamellæ close, when young a little paler than the pileus, minutely eroded on the edge; stem slender, squamulose, hollow, often expanded at the base into a thin disk.

Plant about 1′ high, pileus 3″–6″ broad, stem scarcely 1″ thick.

Damp, decaying leaves in water holes of swamps. Indian Lake. July.

The minute scales of the pileus easily rub off and they disappear with age. They sometimes project from the margin in a fimbriate manner.

AGARICUS CHIMONOPHILUS *B. & Br.*

Vegetable mold or decaying wood lying on or half buried in damp earth Forestburgh. Sept.

Our plant does not fully agree with the description of the species under which we have placed it. The lamellæ are rounded behind, the spores are ferruginous-brown, and the pileus, which is often attached to the matrix by downy filaments, is frequently half an inch broad. Further investigation may require its separation.

COPRINUS AQUATILIS *n. sp.*

Pileus membranaceous, campanulate, sulcate-plicate almost to the apex, furfuraceous, yellowish-brown; lamellæ subdistant, reaching the stem, brownish then black; stem slender, equal, hollow, furfuraceous, whitish; spores .0005′ long, .0003′ broad.

Plant fragile, 2′–2.5′ high, pileus 6″–8″ broad.

Sticks and twigs partly submerged or lying in wet mossy places. Adirondack Mts. Aug. (Plate 1, figs. 26–28.)

The young plant is more yellow than the mature one. The species is related to *C. silvaticus*.

CORTINARIUS (HYGROCYBE) FUSCOVIOLACEUS *n. sp.*

Pileus convex, soon expanded or centrally depressed, umbonate, smooth, hygrophanus, chestnut-brown tinged with violet, the margin whitened by silky fibrils; lamellæ at first plane then ventricose, rounded behind, rather distant, dark-violaceous, becoming subcinnamon; stem flexuous, equal, solid, colored like the pileus, silky fibrillose.

Plant 1′–1.5′ high, pileus 6″–10″ broad.

Sphagnous marshes. Forestburgh. Sept.

HYGROPHORUS AURANTIACOLUTEUS *B. & C.*

Among Dicranum. Sandlake and Albany. Aug.

GOMPHIDIUS STILLATUS *Strauss.*

Low mossy ground in woods. Adirondack Mts. Aug.

LACTARIUS ALPINUS *n. sp.*

Pileus fleshy, dry, umbilicate or centrally depressed, tomentose-squamulose, ochraceous or tawny-yellow; lamellæ close, yellowish-ochraceous; stem subequal, solid, whitish or pallid; milk white, unchangeable, taste acrid.

Plant about 2′ high, pileus 1′ broad, stem 2″–3″ thick.

Thin soil covering rocks. Summit of Haystack Mt., at an altitude of about 5,000 ft. Aug.

Only three specimens were found. I have seen no other Lactarius on the high summits of the Adirondacks.

MARASMIUS MINUTUS *n. sp.*

Pileus membranaceous, convex, glabrous, striate-sulcate, reddish-brown; lamellæ distant, subvenose, unequal, sometimes branched, white; stem capillary, smooth, shining, blackish-brown.

Plant scarcely 1′ high, pileus 1″–2″ broad.

Fallen leaves in woods and swamps. Catskill Mts. and Sandlake. July.

This is a very small species, easily overlooked. The color of the pileus approaches a vinous red.

MARASMIUS MINUTISSIMUS *n. sp.*

Very minute; pileus convex or expanded, pubescent, white, sometimes nodding; lamellæ few, vein-like, scarcely extending to the margin of the pileus; stem capillary, smooth or slightly hairy, blackish-brown, pellucid-white at the top.

Plant 1″–3″ high, the pileus scarcely broader than the head of a pin.

Fallen leaves in woods. Forestburgh. Sept. (Plate 2, figs. 27 and 28).

This is the smallest species known to me. It is remarkable for the pubescence of the pileus. In damp weather the plant appears as if glandular-pubescent, minute drops of moisture tipping the hairs. When young the stem is sometimes white nearly or quite to the base. The lamellæ are reduced to three or four vein-like elevations.

PANUS OPERCULATUS *B. & C.*

Dead branches of alders. Adirondack Mts. Aug.

POLYPORUS CUPULÆFORMIS. *B. & C.*

Dead branches. Poughkeepsie. *W. R. Gerard.*

POLYPORUS SQUAMOSUS *Fr.*

Trunk of an elm tree. Albany. May.

POLYPORUS SPUMEUS *Fr.*

Decaying trunks of trees. Adirondack Mts. Aug.

POLYPORUS VOLVATUS *n. sp.*

Subglobose, fleshy, firm, smooth, flattened behind and appearing sessile, but usually attached to the matrix by a small point, whitish, more or less tinged with yellow, red or reddish brown, the cuticle continuous, completely enveloping the hymenium like a coriaceous volva, at length rupturing below and revealing the hymenium; pores long, whitish, minute or punctiform, the mouths yellowish with a tinge of cinnamon; flesh white; spores elliptical, flesh-colored, .0003′–.00035′ long, about .0002′ broad.

Trunks of dead spruce trees, *Abies nigra.* Indian Lake. July. (Plate 2, figs. 3–6.)

This is a small species, rarely attaining a diameter of one inch, but very remarkable for the volva-like prolongation of the pileus around and below the pores. When this is ruptured, little heaps of spores are seen dotting its inner surface. So abundant are these and so protected from the air when they fall from the pores, that they sometimes accumulate in heaps whose altitude much exceeds the diameter. The volva does not lie close to the mouths of the pores but leaves an intervening space nearly as great as the distance from the mouths of the pores to the apex of the pileus. The length of the pores generally exceeds the thickness of the flesh of the pileus. The form of the plant with the volva-like portion cut away is nearly hemispherical. This interesting but rare and aberrant species is allied to the suberose *Placodermei.*

POLYPORUS NIGRICANS *Fr.*

Trunks of birch trees. Indian Lake. July.

POLYPORUS CONCHATUS *Fr.*

Trunks of ash trees. Indian Lake. July.

POLYPORUS PINICOLA *Fr.*

Trunks of dead pine trees. Croghan. Sept.

POLYPORUS VULGARIS *Fr.*

Decaying wood. Forestburgh. Sept.

POLYPORUS INCARNATUS *Fr.*

Decaying wood. Buffalo, *Clinton.* North Greenbush. Oct.

POLYPORUS SALVIÆ *B. & C.*

Decaying wood. Goat Island. *Clinton.*

TRAMETES ODORATUS *Fr.*

Old trunks of spruce trees Adirondack Mts.

MERULIUS PORINOIDES *Fr.*

Old pine stumps. Forestburgh. Sept.

MERULIUS BELLUS *B. & C.*

Decaying wood. Tonawanda. *Clinton.*

IRPEX LACTEUS *Fr.*

Dead branches and stumps of frondose trees. Forestburgh. Sept.

This is thought by some to be a variety of *Irpex sinuosus.*

STEREUM BALSAMEUM *n. sp.*

Orbicular or confluent, resupinate, rather thick and firm; slightly tawny-tomentose beneath; the margin free, thin, whitish; hymenium brown, uneven, sometimes concentrically zoned, stained dark red or purplish where bruised, the stains at length changing to black.

Bark of dead balsam trees, *Abies balsamea.* Adirondack Mts. Aug.

By the confluence of individuals patches several inches in diameter are sometimes formed. In the dried specimens the hymenium is more or less cracked.

STEREUM VERSIFORME *B. & C.*

Dead branches. Forestburgh. Sept.

CORTICIUM CALCEUM *Fr.*

Decaying wood and dead branches. North Greenbush. Oct.

CORTICIUM CREMORICOLOR *B. & C.*

Spruce wood. Indian Lake. July. The areolæ in our specimens are small but quite distinct.

CORTICIUM LILACINOFUSCUM *B. & C.*

Old fence posts. Greenbush.

CYPHELLA CANDIDA *n. sp.*

Cups scattered or gregarious, minute, obconic, nearly or quite sessile, externally tomentose, soft, white, sometimes deflexed.

Dead stems of ferns, *Osmunda cinnamomea.* Forestburgh. Sept.

CLAVARIA SPATHULATA *n. sp.*

Simple, pale yellow; club compressed, spatulate, tapering into the slender slightly furfuraceous stem.

Plant scarcely more than two lines high.

Dead branches of hickory trees, *Carya alba*. Greenbush. Oct. (Plate 2, figs. 20 and 21.)

The color is like that of *Spathularia flavida*.

TYPHULA GYRANS *Fr.*

Decaying leaves, twigs and stems in damp places. Sandlake, Portville, Forestburgh and Adirondack Mts. Aug. and Sept.

TYPHULA FILICINA *n. sp.*

White; club thickened, obovate or elliptical, obtuse, erect; stem rather stout, short, pubescent, usually slightly thickened toward the base, arising from a chestnut-colored sclerotium.

Plant 1″–2″ high.

Dead stems of ferns, *Osmunda cinnamomea*, in damp places. Forestburgh. Sept. (Plate 1, figs. 29 and 30.)

This is a smaller but comparatively stouter plant than the preceding, easily distinguished by its shorter club and stem.

TREMELLA ENATA *B. & C.*

Dead oak branches. Forestburgh. Sept.

TREMELLA STIPITATA *n. sp.*

Head small, tremelloid, subglobose or irregular, glabrous, more or less uneven with gyrose convolutions, yellow, often changing to orange or reddish-brown in drying; stem distinct, firm, dry, solid, nearly equal, yellow, often tinged with brown at the base, rarely throughout its whole extent, sometimes divided at the top into two branches, each bearing a head; spores subelliptical, with a slight oblique apiculus at one end, .00033′ long.

Plant 5″–10″ high.

Decaying wood in swamps. Forestburgh. Sept. (Plate 2, figs. 22 and 23.)

The texture of the stem is very unlike that of the head. The color of the stem generally fades to whitish or pallid in drying. The stem is sometimes slightly recurved at the top and appears to penetrate the receptacle as in the genus

Spathularia. Barren stems occur, obtusely pointed at the apex and destitute of a head. The species belongs to the subgenus Coryne, and seems to be related to *Coryne gyrocephala* B. & C., but its larger size and different color easily distinguish it. The changed color of the dried plants is readily restored by soaking in water.

DACRYMYCES FRAGIFORMIS *Nees.*

Decaying wood. Adirondack Mountains. August.

This plant retains its bright red color in the dried state. It produces an abundance of moniliform strings of conidia.

DITIOLA RADICATA *Fr.*

Decaying wood. Buffalo and Olean. *Clinton.* Forestburgh. Spring and Autumn.

RETICULARIA UMBRINA *Fr.*

Old logs in woods. Forestburgh. September.

The silvery hue of the peridium is conspicuous and beautiful.

DIDERMA UMBILICATUM *Pers.*

Decaying wood. Adirondack Mountains. August.

The specimens when collected were old and imperfect, but the very large columella leaves scarcely a doubt of the correctness of the determination.

PHOMA SYRINGÆ *B. & C.*

Bark of Syringa. Buffalo. *Clinton.*

Identified by comparison with specimens received from Dr. Curtis.

PHOMA ELLIPTICUM *n. sp.*

Perithecia at first covered by the epidermis, then free, scattered, elliptical, black; spores oblong-elliptical, colorless, with a small nucleus near each end, .00035′ long, .00016′ broad.

Dead stems of *Galium boreale.* West Albany. May.

The perithecia are rather large and when broken from the matrix leave a whitish spot surrounded by a black line.

SEPTORIA VERBENÆ *D. & R.*

Verbena leaves. Poughkeepsie. *Gerard.*

DISCOSIA MACULÆCOLA *Gerard.*

Living leaves of *Smilax rotundifolia.* Poughkeepsie. *Gerard.*

PESTALOZZIA MARIÆ *Clinton n. sp.*

Spots arid, brown or cinereous with a brown margin; pustules minute, scattered, erumpent, black; spores fusiform, five-septate, the four intermediate cells colored, a terminal cell and a long seta at each end hyaline, length of spore exclusive of the setæ .0007′–.001′.

Leaves of *Rhododendron maximum.* Buffalo. *Clinton.* Forestburgh. September. (Plate 2, figs. 1 and 2.)

This is apparently a rare species. In all the specimens that I have seen the spots are large and situated at the apex of the leaf. The epidermis is ruptured in a somewhat stellate manner. The peduncle sometimes remains adhering to the spore, thus giving the appearance of two setæ at one end.

CORYNEUM TRISEPTATUM *n. sp.*

Spots large, brown or cinereous; stroma obsolete; sori scattered, minute, erumpent, black; spores oblong-pyriform, .0006′–.0007′ long, at first colorless and biseptate, then triseptate with one apical and two basal cells hyaline, the remaining cell broad and colored; peduncle about as long as the spore, easily separating.

Living leaves of *Rhododendron maximum.* Forestburgh. September.

I am not acquainted with *Coryneum Rhododendri* Schw. which also inhabits Rhododendron leaves, but judging from the description it must be distinct from our plant for it is said to have thick septate pedicels and no mention is made of the most remarkable feature of the spores, the broad colored central cell, sharply contrasted with the two hyaline cells below it and the single one above it.

SPILOCÆA CONCENTRICA *Schw.*

Decaying squashes. Albany. November.

HELICOSPORIUM OLIVACEUM *n. sp.*

Flocci black, subulate, simple, septate, the articulations several times longer than broad; spores slender, coiled, simple or obscurely septate, olivaceous.

Hemlock wood. North Greenbush. October.

It forms thin olivaceous patches. Closely related to *H. vegetum*, from which the long articulations of the flocci and the obscurely septate or simple spores seem to separate it.

HELICOSPORIUM ELLIPTICUM *n. sp.*

Tufts elliptical or oblong, sometimes confluent or effused, greenish-brown or brown; flocci intricately and somewhat reticulately branched, colored, septate, the articulations three to five times as long as broad; spores very long, closely coiled in about eight volutions, forming ellipsoid masses, greenish-yellow, containing many nuclei.

With the last, than which it is much darker colored. The flocci appear to anastomose as in the capillitium of *Stemonitis*. The spores are not distinctly septate. (Plate 2, figs. 9–12.)

SPORIDESMIUM CONCINNUM *B. & C.*

Decaying wood. Buffalo. September. *Clinton.*

PUCCINIA VERATRI *Clinton Niessl.*

Spots indefinite, yellowish; sori scattered, small, brown; spores elliptical, often irregular, constricted in the middle, easily separating at the septum, pale, .001′ long, .00065′ broad; peduncle very short.

Lower surface of leaves of *Veratrum viride.* Buffalo. July. *Clinton.* (Plate 2, figs. 13 and 14.)

Under slight pressure the spore readily separates into two parts as in *P. Lobeliæ.*

UROMYCES LILII *Clinton n. sp.*

Sori amphigenous, small, scattered, surrounded or partly covered by the ruptured epidermis, brown; spores obovate, rough, .0011′–.0015′ long, .0008′–.001′ broad; often with a slight apiculus at the apex; peduncle very short.

Leaves of *Lilium Canadense.* Buffalo. July. *Clinton.*

The roughness of the spore appears to be produced by little pits or depressions. The species is related to *U. apiculosa* and *U. Euphorbiæ.*

UROMYCES PHASEOLI *Strauss.*

Leaves of Phaseolus. Yonkers. *Dr. E. C. Howe.*

I have seen no description of this species and have determined the specimens by comparison with those received from Dr. Curtis under the above name.

USTILAGO SYNTHERISMÆ *Schw.*

In the sheaths of *Cenchrus tribuloides.* Center and Port Jervis. September.

It seems to prevent the development of the annoying spikes of spiny involucres of the grass. If this be really the case the fungus ought to be classed among the useful species.

UREDO SMILACIS *Schw.*

Leaves of *Lilium Canadense.* Buffalo. August. *Clinton.*

UREDO EMPETRI *D. C.*

Leaves of the crowberry, *Empetrum nigrum.* Summit of Haystack Mountain. August.

ÆCIDIUM NESÆÆ *Gerard.*

Stems and leaves of *Nesæa verticillata.* Poughkeepsie. *Gerard.* Buffalo. *Clinton.*

ÆCIDIUM DUBIUM *Clinton. n. sp.*

Spots scattered, suborbicular, yellow or purplish; peridia small, subcircinating, crowded; spores yellow.

Lower surface of leaves of Calystegia. Squaw Island. June. *Clinton.*

Very near *Æ. Compositarum*, and in the dried state scarcely to be distinguished from that species except by the habitat.

PERIDERMIUM ELATINUM *Lk.* (*Æcidium elatinum* A. & S.)

Living leaves of balsam trees, *Abies balsamea.* Indian Lake. July. The leaves attacked by this fungus scarcely exceed half the usual size.

PERIDERMIUM BALSAMEUM *n. sp.*

Spots indefinite, whitish or pale yellow; peridia subrotund, slightly elevated, generally arranged in two rows, at first entire, then lacerated at the apex; spores subglobose, rough, white, about .001′ in diameter.

Lower surface of balsam leaves. Adirondack Mountains. August. (Plate 2, figs. 24–26.)

The affected leaves attain the usual size, but, by their pale color, contrast beautifully with the healthy ones, and give the foliage a variegated appearance. The fungus was observed on young trees only.

PERIDERMIUM DECOLORANS *n. sp.*

Spots indefinite, yellow, generally discoloring the whole leaf; peridia subrotund or oblong, pustulate, at length rup-

tured and lacerated at the apex, white; spores large, subglobose, rough, with a thick epispore, yellow, about .0015′ in diameter.

Leaves of spruce trees, *Abies nigra*. Adirondack Mountains. August. (Plate 1, figs. 19–21.)

I found this species very abundant on the low starved spruces of the high summits and cold sphagnous marshes of the Adirondack Mountains, attacking and discoloring the foliage to such an extent as to give the trees a yellowish hue even when seen at a distance. Minute brown or blackish dots, probably the spermogonia of the fungus, are scattered upon the affected leaves.

PTERULA SETOSA *n. sp.*

Simple or branched, setose, about one-fourth of an inch high, whitish or straw-colored with whitish tips, the branches slightly diverging, clothed above with widely diverging hair-like filaments; spores elliptical or subglobose, .00016′–.0002′ long.

Decaying *Polyporus elegans*. Adirondack Mts. Aug.

The plants grow rather thickly upon the matrix, and are in appearance suggestive of prickles upon a burr

CLADOSPORIUM LIGNICOLA *Cd.*

Birch chips. Indian Lake. July.

CLADOSPORIUM TYPHÆ *Schw.*

Dead leaves of *Typha latifolia*. Buffalo. *Clinton.*

This appears to differ from *C. Herbarum* in habit.

OIDIUM CORTICALE *n. sp.*

Tufts minute, orbicular, convex, at first compact and bluish-brown, then more lax and paler or cinereous; flocci few, nodose; spores small, colored, subglobose or subangular, .00016′ in diameter, joined together in moniliform strings.

Old bark. North Greenbush. Oct. (Plate 2, figs. 7 and 8.)

The strings of spores do not so readily break up into distinct spores as in most other species.

FUSIDIUM FLAVOVIRENS *Fr.*

Fallen leaves. Albany. Oct.

MONILIA CANDIDA *n. sp.*

Flocci scattered, erect, simple, septate, pellucid; heads of spores rather compact, subglobose, erect, white; spores subglobose, .00025′–.0003′ in diameter.

Decaying fungi. Forestburgh. Sept.

PILOBOLUS CRYSTALLINUS *Tode.*

Horse dung. Bethlehem. September.

The spores in our specimens are about .0005′ in diameter.

CHÆTOMIUM MELIOLOIDES *C. & P.*

Scattered, minute; conceptacles brown, globose, springing from a septate branched mycelium, hairs dark-brown, rather rigid, two to three times dichotomously branched above, branches divaricately spreading; spores ovate or subglobose, pale-brown, .00018′ in diameter.

Old stems of Indian corn. North Greenbush. October.

Similar to *C. funicolum*, but with the hairs more branched, the branches more spreading, and the spores equal in size. Externally it resembles a *Meliola.*

HELVELLA SPHÆROSPORA *n. sp.*

Pileus large, irregular, ochraceous, the margin free, somewhat veiny and minutely tomentose beneath; stem stout, deeply lacunose, smooth or with a minute appressed tomentum, white; asci cylindrical; spores globose, .00035′–.0004′ in diameter.

Plant 3′–4′ high, pileus 3′–4′ broad, stem 1′–2′ thick.

Old stumps in woods. Indian Lake. July.

In the dried specimens the pileus becomes darker, so that the colors resemble those of *H. esculenta*, but the true relationship is with *H. costata.* The globose spores are peculiar and suggest the specific name.

MITRULA CUCULLATA *Fr.*

Fallen leaves of spruce trees. Forestburgh. September.

This rare and interesting little plant has been placed by various authors in the genera Helvella, Leotia, Heyderia, Geoglossum and Mitrula. The head is either ovate or conical, and in large specimens is slightly wrinkled or uneven. It is whitish, pale-yellow or cream colored when fresh, but changes to a subferruginous or cinnamon hue in the dried specimens.

MITRULA INFLATA *Schw.*

Decaying wood and bark of trees. Catskill Mts. and Worcester. July and August.

I have never found this plant fertile.

PEZIZA ADUSTA *C. & P.*

Gregarious or scattered; cups subglobose, then open and hemispherical, at length flattened, one line broad, somewhat irregular when dry, brown externally, with a few radiating white filaments at the base; disk amber-colored or yellowish, darker when dry, nearly plane or slightly concave; asci cylindrical; spores elliptical, binucleate, .0007′ long, .0003′ broad; paraphyses clavate, brownish.

Burnt ground under pine trees. West Albany. July.

PEZIZA SUBCARNEA *C. & P.*

Scattered, stipitate, small; cups at first clavate then infundibuliform, wholly flesh-colored; stem long, attenuated at the base, expanded above into the cup; margin contracted, paler; asci cylindrical; spores linear, obtuse, hyaline.

Dead liverworts on old logs in woods. Indian Lake. July.

The liverworts die in suborbicular patches which are sometimes several inches in diameter. On these patches of dead plants the fungus grows. The inference is that the fungus causes the death of the liverwort. The species is closely allied to *P. pyriformis*.

ASCOBOLUS PILOSUS *Fr.*

Dung of deer. Adirondack Mts. August.

HELOTIUM ACICULARE *Fr.*

Decaying half-buried wood. Adirondack Mts. August.

HELOTIUM FASTIDIOSUM *n. sp.*

Cups small, convex or plane, stipitate, pale yellow or whitish; stem slender, about equal in length to the diameter of the cups, brownish or yellow with a brownish base; asci narrowly clavate; spores crowded or biseriate, elongated, subclavate, multinucleate, .001′ long, about .0002′ broad, sometimes slightly curved.

Petioles and midribs of fallen alder leaves in wet places. Forestburgh. September.

The long spores are narrowed toward one end, and have a shape very similar to that of the asci that contain them. I have never found it growing on the blade of the leaf.

TYMPANIS FRAXINI *Schw.*

Dead branches of ash trees. Forestburgh. September.

HYSTERIUM TUMIDA *Duby.*

Fallen leaves of beech trees. Croghan. September.

HYSTERIUM XYLOMOIDES *Chev.*

Fallen maple leaves. Croghan. September.

HYSTERIUM RHODODENDRI *Schw.*

Leaves of *Rhododendron maximum.* Forestburgh. Sept.

RHYTISMA MONOGRAMMA *B. & C.*

Living leaves of grape vines. Port Jervis. September.

I have seen no description of this species, and depend upon a comparison of our plant with authenticated specimens for its identification.

TORRUBIA ENTOMORRHIZA *Fr.*

Dead larvæ imbedded in decaying wood or leaves in woods. Adirondack Mts. August

The head in our specimens is yellow when fresh.

EPICHLOE HYPOXYLON *n. sp.*

Convex or pulvinate, subconfluent, blackish externally, white within, seated on a whitish or gray subiculum; ostiola prominent; asci very long, linear; spores elongated, filiform, multinucleate, colorless.

Living stems of grass. Sandlake. July.

In shape and color this plant is suggestive of the genus Hypoxylon, but its habitat and spores point to Epichloe.

HYPOMYCES AURANTIUS *Tul.*

Decaying fungi. Buffalo. *Clinton.*

NECTRIA EPISPHÆRIA *Fr.*

On *Diatrype stigma* and allied fungi. Forestburgh. Sept.

DOTHIDEA TETRASPORA *Fr.*

Dead stems of *Iva frutescens.* Yonkers. *Howe.*

DOTHIDEA DALIBARDÆ *n. sp.*

Spots small, scattered, suborbicular, reddish-brown; stroma central, uneven, prominent on both surfaces, black; ostiola obscure; asci clavate; spores crowded, simple, subfusiform, nearly colorless, .0005′–.0006′ long.

Living leaves of *Dalibarda repens*. Forestburgh. Sept. (Plate 1, figs. 7–9).

DIATRYPE PLATASCA *n. sp.*

Stroma suborbicular, rather small, erumpent, black; ostiola long, slender, often slightly curved, cylindrical; asci oblong or subfusiform, very broad; spores crowded, colorless, oblong, uniseptate, quadrinucleate, .0005′–.0006′ long.

Dead birch branches. Adirondack Mts. August.

The long slender ostiola and very broad asci are characteristic features of this species. It seems to be related to *D. incarcerata*.

DIATRYPE CORNICULATA *Ehrh.*

Dead bark of ash trees. Sandlake. August.

VALSA IMPULSA *C. & P.*

Erumpent; stroma suberose, formed from the bark; perithecia eight to twelve, clustered, globose, black; ostiola long, smooth, black; asci cylindrical; spores fusiform, uniseptate, hyaline, each cell binucleate, .0008′ long, .0003′ broad.

Dead branches of mountain ash. Adirondack Mts. August.

VALSA SUBCLYPEATA *C. & P.*

Perithecia three or four together, forming pustules beneath the elevated black shining epidermis which is at length lacerated, the torn edge becoming whitish; ostiola convergent, just piercing the ruptured epidermis; asci narrowly fusiform; spores linear, minute, rounded at the ends, slightly curved, hyaline.

Dead branches of oak and Rhododendron. Forestburgh. Sept.

VALSA PECKII *Howe.*

Perithecia numerous, crowded together, sunk in the wood; ostiola subcylindrical, obtuse, crowded, erumpent, black,

sometimes involved in a gray tomentum ; asci linear ; spores oblong-elliptical, colored, uniseriate, uniseptate, .0005′–.0006′ long.

Dead branches of *Vaccinium corymbosum.* Forestburgh. September. Also on branches of *Kalmia latifolia. J. B. Ellis.* (Plate 1, figs. 15–18).

The young spores are pale and simple, containing one or more nuclei, but they soon become colored and uniseptate.

LOPHIOSTOMA SEXNUCLEATA *Cooke.*

Dead stems of grape vines. North Greenbush. October.

The perithecia in our specimens are closely placed and the spores are smaller than in the type, being .001′–.0012′ long, but I have not thought best to separate our plant as a distinct species.

SPHÆRIA THUJINA *n. sp.*

Perithecia scattered, nearly free, hemispherical or conical, slightly rugulose, thin, fragile ; ostiola at first slightly papillate then pertuse ; spores large, uniseptate, oblong-elliptical, constricted at the septum, colored, .0015′–.0018′ long.

Decaying wood of *Thuja occidentalis.* Adirondack Mts. Aug.

SPHÆRIA PILIFERA *Fr.*

Decaying wood. Buffalo. *Clinton.*

The specimens are sterile but appear to belong here. I have seen no description of the fruit of this species and conclude that it is rarely fertile.

SPHÆRIA LAGENARIA *Pers.*

On the hymenium of some old Polyporus. Adirondack Mountains. August.

I find no account of the spores of this species and therefore subjoin the following description of the fruit of our specimens.

Asci very broad, delicate, fugacious ; spores crowded, simple, elliptical, colored, .0005′ long, .0003′ broad.

This is, apparently, a rare species with us. The spores are sometimes found adhering, in a mass, to the apex of the long slender ostiolum. The subicular tomentum is present in some of the specimens and there is sometimes a hairy appearance to the perithecia which seems to be due to this tomentum or to some minute mucedinous growth.

SPHÆRIA ORTHOGRAMMA *B. & C.*

Old stems of Indian corn. North Greenbush. Oct. Sterile.

SPHÆRIA PARNASSIÆ *n. sp.*

Perithecia scattered, convex or sub-hemispherical, prominent, pierced, black; asci cylindrical; spores long, narrow, uniseptate, generally constricted at the septum, often slightly curved, colored, .0015′–.0016′ long, with one or two nuclei in each cell.

Dead stems of *Parnassia Caroliniana.* Albany. Sept.

SPHÆRIA ARCEUTHOBII *n. sp.*

Perithecia small, densely cæspitose, oblong or cylindrical, very obtuse, shining, black; asci subclavate, fugacious; spores crowded, globose, colorless, .00016′ in diameter.

Capsules of *Arceuthobium pusillum.* Forestburgh. Sept. (Plate 1, figs. 10–14.)

It forms little black tufts, crowning the fruit at the tips of the stems and branches. I have not seen it on the staminate plant. I am not fully satisfied that the generic reference is correct, as the perithecia seem to be mouthless. It is interesting to observe the extent to which parasitism prevails. The Arceuthobium is a parasite on the spruce, this fungus is parasitic on the Arceuthobium, and in a few instances a third parasite, a minute white mold, was seen on the perithecia of the fungus

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NEW STATIONS OF RARE PLANTS—REMARKS AND OBSERVATIONS.

PTELEA TRIFOLIATA *L.*

Wading River, L. I. *Miller.*

SAMBUCUS PUBENS *Mx.*

The variety with dissected leaves occurs in the town of Indian Lake.

SOLIDAGO CÆSIA *L.*

Mr. Young finds on Long Island a variety with white flowers.

NABALUS BOOTTII *DC.*

I am not aware that this species has been found anywhere on the Adirondack Mts., except on the summit of Whiteface, and I greatly fear it will soon be exhausted or trodden out from this station which is now so frequently visited by tourists and others. Its near ally, *N. nanus*, occurs everywhere on the higher summits and slopes of these mountains.

DIPLOPAPPUS UMBELLATUS *T. & G.*

Among the Adirondacks this plant is greatly reduced in size and frequently bears no more than six to ten heads of flowers. But notwithstanding the elevation and coolness of the locality it is in flower there by the middle of August.

RHODODENDRON MAXIMUM *L.*

Near Chapel Pond, Essex county. *O. S. Phelps.* It is also very abundant in Forestburgh, Sullivan county, where it forms dense and almost impenetrable thickets.

CAMPANULA ROTUNDIFOLIA *L.*

This plant manifests a tendency to sport. Small flowerless specimens collected near Port Jervis have the rounded leaves on the upper part of the stem, the linear leaves ing below them.

RHINANTHUS CRISTA-GALLI *L.*

Summit of Haystack Mt. It is interesting to note that in this locality as well as in the neighboring one on Mt. Marcy this plant occupies the southern inclination of the exposed summit, where it is in a measure protected from the bleak northwesterly winds. It was not found on Skylight, whose broad open summit gave promise of a fine botanical field. Perhaps the very broad and nearly flat summit of this mountain does not afford a sufficiently protected southern inclination for it.

POLYGONUM CAREYI *Olney.*

Long Pond, Wading River. *Young.*

ARCEUTHOBIUM PUSILLUM *Pk.*

Forestburgh. It is more abundant there than in the Sandlake locality. In one instance it was growing in great profusion on an unusually thrifty-looking tree, just as if the luxuriance of the parasite was in proportion to that of its host. Both staminate and pistillate plants were occasionally seen on the same tree, but I have not yet found them intermingled on the same branch. The pistillate plants seem to be the most numerous.

ABIES NIGRA *Poir.*

This tree extends to the summits of all the high peaks of the Adirondacks, but in the most elevated situations it generally assumes the appearance of a low, half-prostrate bush, the branches sometimes spreading laterally as in the dwarf yew, and the leaves are frequently glaucous. In less elevated situations where the trees are thrifty the glaucous-leaved variety, in the absence of the cones, might easily be mistaken for the white spruce.

LARIX AMERICANA *Mx.*

Variety *pendula* occurs near "Griffin's Place," Indian Lake. A small shrubby form grows near the summit of Haystack Mt., which is probably the highest altitude attained by this tree in the State. It is there in company with *Abies nigra*, *A. balsamea*, *Juniperus communis* and *Thuja occidentalis*,—more coniferous trees than I have seen on any of the other high summits of the Adirondacks.

ZYGADENUS GLAUCUS *Nutt.*

Lodi swamp near Syracuse, in company with *Tofieldia glutinosa*. *Rev. H. Wibbe.*

JUNCUS STYGIUS *L.*

Marshy borders of a lake, Adirondack Mts. The only locality in the State hitherto reported for this rare species is Perch Lake, Jefferson county, and this I infer from the remarks in Paine's Catalogue of Oneida County Plants, is either destroyed or exhausted. Though the newly discovered locality is a remote one, seldom visited by botanists, I hesitate, for prudential reasons, to designate it more definitely.

COMMELYNA VIRGINICA *L.*

Fishkill, where it is apparently a stray from cultivation.

CAREX SCIRPOIDEA *Mx.*

This, and *Abies nigra*, should be added to the list of flowering plants found on the summit of Mt. Marcy.

CAREX SILICEA *Olney.*

Sandy shores near Sag Harbor.

CAREX FŒNEA *Willd.*

Suffolk county. *Young.*

SPOROBOLUS SEROTINUS *Gr.*

Near the Old Adirondack Iron Works. Essex county.

EQUISETUM SCIRPOIDES *Mx.*

Shaded ravines. Adirondack Mts.

SPHAGNUM NEGLECTUM *Angst.*

Marshes between Nipple Top and Mt. Colvin.

Dr. Braithwaite considers this as synonymous with *S. laricinum* Spruce, and as it is somewhat doubtful if either is more than a variety of *S. subsecundum* I forbear reporting it as a species to be added to our flora.

STEREOCAULON CONDENSATUM *Laur.*

A variety of this occurs on the high summits of the Adirondacks.

AGARICUS CAMPANELLA V. BADIPUS *Eng. Fl.*

Ground in pine woods. West Albany. Oct.

AGARICUS FIBULOIDES *Pk.*

Burnt ground. Forestburgh. Sept.

AGARICUS STRICTIOR *Pk.*

A variety of this species occurs in sphagnous marshes in Forestburgh. The stem is less straight and more fragile than usual, and the pileus is somewhat concentrically zoned when moist.

CORTINARIUS ASPER *Pk.*

This plant sometimes grows in tufts or clusters and bears a very close resemblance to *Agaricus melleus*, both in color and in the character of the scales of the pileus.

LACTARIUS GLYCIOSMUS *Fr.*

Abundant under pine trees in Forestburgh, where it generally has the pileus of a lurid-brown color.

POLYPORUS SULFUREUS *Fr.*

An unusually large and intricately confluent mass of this fine and edible species was found growing on the trunk of a cherry tree in Deerfield by *Hon. Horatio Seymour*. A part of the specimen was presented to, and is preserved in, the State Herbarium. He has also contributed specimens of *Helvella esculenta* var. *conica* Fr., which grew in considerable abundance on his grounds in Deerfield.

USTILAGO UTRICULOSA *Tul.*

A form of this species was found in Forestburgh, having the spores rather larger than usual and their reticulations smaller and less distinct. It inhabits *Polygonum sagittatum*. Nine species of this genus are now known to occur in the State. They are injurious to the plants they attack and are worthy of careful study. To facilitate the identification of the species, the following analytical synopsis and list of host plants is subjoined :

a. Spores produced in the leaves only	b.
a. Spores produced in the flowers, fruit or ovaries	c.
b. Spores produced in suborbicular swellings or blotches	Erythronii.
b. Spores produced in long lines	longissima.
c. Spores intensely black in the mass	d.
c. Spores black, generally tinged with brown	e
c. Spores black, tinged with purple	utriculosa.
d. Inhabiting Juncus	Junci.
d. Inhabiting Carex	urceolorum.
e. Place of spore formation, much swollen or distended	Maydis.
e. Place of spore formation, not much swollen	f.
f. Generally affecting but few of the ovaries	Montagnei.
f. Generally affecting whole spikes or panicles	g.
g. Spores smooth, .0002 inch in diameter	Carbo.
g. Spores rough, .0004 inch in diameter	Syntherismæ.

Ustilago Erythronii *Clinton.*	Inhabits	Erythronium Americanum *Sm.*
U. longissima *Tul.*	"	Glyceria aquatica *Sm.*
U. utriculosa *Tul.*	"	Polygonum (several species).
U. Junci *Schw.*	"	Juncus tenuis *Willd.*
U. urceolorum *Tul.*	"	Carex (several species).
U. Maydis *Cd.*	"	Zea Mays *L.*
U. Montagnei *Tul.*	"	Rhynchospora alba *Vahl.*
U. Carbo *Tul.*	"	Avena sativa *L.* Triticum vulgare *Vill.*, etc.
U. Syntherismæ *Schw.*	"	Cenchrus tribuloides *L.*

I have seen *U. utriculosa* on *Polygonum Pennsylvanicum* and *P. sagittatum*. In Europe it occurs on other species.

U. urceolorum is found with us on *Carex Pennsylvanica* and *C. umbellata*. In Europe it attacks other species. *U. Maydis* Cd. is the same as *U. Zeæ* Schw., and *U. Carbo* Tul. equals *U. segetum* Ditm. *U. Syntherismæ* is said to occur also on Digitaria and Andropogon.

In closing this report, grateful acknowledgments are rendered to C. F. Austin, Esq., for aid in the determination of Hepaticæ, and to H. Willey, Esq., for aid in the determination of lichens, and to all the botanists whose names appear in the preceding pages, for their kind coöperation in the investiga-

tion of our flora, and for their generous contributions of specimens.

When no name is added to the station or stations herein given, the plant has been found therein by the writer. Dates signify the time when the specimens were collected.

Respectfully submitted,

CHAS. H. PECK.

ALBANY, *January* 6, 1874.

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THE NIAGARA AND LOWER HELDERBERG GROUPS:

THEIR RELATIONS, AND GEOGRAPHICAL DISTRIBUTION IN THE UNITED STATES AND CANADA.

By JAMES HALL.

In proceeding to the discussion of this subject, I propose in the first place to cite a paper read by Mr. A. H. Worthen at the Troy Meeting of the American Association, and published in the Proceedings under the following title:

"*Remarks on the Relative Age of the Niagara and so-called Lower Helderberg Groups. By A. H. Worthen, of Springfield, Illinois.*"

"Recent investigations have developed certain facts, bearing upon the question of the relative age of the above-named groups, which we desire to present in a brief manner for the consideration of those who are especially interested in stratigraphical geology.

"In northern and western Illinois, from the mouth of the Illinois river northward to the Wisconsin line, the Upper Silurian division of the palæozoic series is represented by buff, gray or yellowish-gray dolomites, sometimes in remarkably even beds, as at Joliet and Grafton; and at other localities by concretionary masses, with but faint traces of stratification, as at Bridgeport, near Chicago, and at Port Byron and Leclaire, at the head of the Upper Rapids on the Mississippi river. They range in thickness from seventy-five to three hundred feet, and directly overlie the shales and argillaceous limestones of the Cincinnati group of the Lower Silurian series. These dolomites are quite fossiliferous, and afford many characteristic Niagara species, among which we may mention *Pentamerus oblongus*, *Spirifer radiatus*, *Calymene Blumenbachii*, *Caryocrinus ornatus*, *Orthoceras undulatum*, etc. From the Bridgeport locality alone, nearly one hundred species of fossils have been enumerated, a large number of which are specifically identical with those found in the Niagara beds of New York and Canada; and, so far as we are aware, all western

geologists are agreed in considering these dolomites to be the stratigraphical equivalents of the Niagara group of New York.

"In southern Illinois we find these dolomites replaced by a series of silicious and argillaceous limestones, forming a group two hundred and fifty feet or more in thickness, which, like the dolomites of northern Illinois, rest directly upon the Cincinnati group, and are immediately succeeded by Devonian strata. At the base of this group of silicious limestones there are some reddish mottled beds, from ten to twenty feet in thickness, that in color bear considerable resemblance to the Medina sandstone of New York; and these mottled limestones pass gradually into the buff and gray silicious beds that constitute the upper and main portion of the group. Fossils are rare in the lower portion of the group here; but the mottled limestones contain some *Orthoceratites*, and joints of large *Crinoidea*, while the middle and upper portions are locally quite fossiliferous, and have afforded many of the characteristic species of the so-called Lower Helderberg group, among which are the following: *Orthis subcarinata*, *O. oblata*, *Cœlospira subcarinata*, [Sic]* *C. imbricata*, *Spirifer perlamellosus*, and *Platyceras spirale* of Hall, and *Acidaspis hamatus* of Conrad, together with species closely resembling, if not identical with, *Merista princeps*, *Platyceras pyramidatum*, *P. unguiforme*, *P. incile*, and *P. multistriatum* of Hall.

"In the first volume of the 'Report on the Geological Survey of Illinois,' these silicious limestones of the southern portion of the State, and the dolomites of northern Illinois, were regarded as the stratigraphical equivalents of the Niagara group, and were included together as representing a single division of the Upper Silurian series; but, subsequently, in a corrected section of the Illinois strata, published in the introduction to the second volume, we were induced, from the dissimilarity of the fossils from the different sections of the State, to regard the silicious limestones of southern Illinois as the representatives of a higher geological horizon, and therefore placed them above the dolomites of the northern part of the State, as the equivalents of the so-called Lower Helderberg group. We are now, however, fully satisfied, from a further examination of these Upper Silurian strata, over a more extended region, that our first conclusion was correct, and that these silicious limestones and dolomites represent the same geological horizon, and that the difference in the specific character of their fossil contents is entirely due to the changes in the oceanic conditions under which they were deposited, and not to the different ages of the sediments themselves.

"South of the Ohio river, these Upper Silurian strata are found well exposed in Tennessee, in the counties of Wayne,

[*Probably this should be *C. concava*.]

Perry and Decatur, on the Tennessee river, outcropping over a wide area and affording numerous species of fossils in a fine state of preservation. The base of the group here consists of reddish and mottled limestones, very similar to those in southern Illinois, and contain *Orthoceras undulatum*, and joints of large crinoids in great abundance. These red limestones are succeeded by a series of greenish-gray shales, and shaly argillaceous limestones, containing *Caryocrinus ornatus*, *Calymene Blumenbachii*, *Sphærexochus mirus*, *Platyceras Niagarense*, *Pentamerus oblongus*, *Orthis hybrida*, *O. elegantula*, etc., associated with such Lower Helderberg forms as *Pentamerus galeatus*, *Spirifer perlamellosus*, *S. macropleura*, *Meristc lævis*, *Rhynchonella ventricosus*, and many others, showing that the fossils of these so-called groups are here intermingled through the same strata, confirming what we had already assumed to be true in Illinois, that the Upper Silurian beds of the west constitute but a single group, and, consequently, that the term 'Lower Helderberg,' as applied to a group distinct from the Niagara, is superfluous. We recollect that, on visiting the locality of these so-called Lower Helderberg limestones in the Schoharie valley some years ago, we observed these limestones resting immediately upon undisputed Lower Silurian beds there, and, in explanation of their occurrence in this apparent abnormal position, we were told that the Niagara group was supposed to have thinned out to the eastward, and that these Lower Helderberg limestones took their place. But is it not quite as probable that there has only been a change in the lithological character of the beds in their eastern extension in New York, resulting there, as in Illinois, in a decided change in the specific character of the fossils which they contain, and that the Upper Silurian beds at Schoharie are the exact equivalents of the Niagara shales and limestones in the western part of the State?

"To recapitulate, then, the facts as they are presented in the west; we find that the dolomites of northern Illinois contain only Niagara fossils, and the silicious limestones of the southern portion of the State contain only those considered characteristic of the Lower Helderberg group; while the beds in Tennessee, occupying the same stratigraphical position with the dolomites and the silicious limestones of Illinois, have Niagara and Lower Helderberg fossils intermingled indiscriminately through the strata. Hence we conclude that the so-called Lower Helderberg group has no real existence as a distinct group of Upper Silurian strata, and that the name, being superfluous, should be dropped from the nomenclature of the American rocks."

It is here proposed, in an article of less than three pages, to discard entirely from the geological series and geological

nomenclature a well-recognized group of strata, well known and clearly defined for more than one thousand miles in extent of country, spreading diagonally over nearly or quite fifteen degrees of latitude, while its undulating and repeated outcrops, owing to anticlinal erosion, add some hundreds of miles more to its known exposures.

The results of tedious and careful field investigations in the working out of hundreds of sections in various parts of the country, supplemented by the study of large collections of numerous species of fossils, and the final comparison of all these fossils, from the far north-east on the St. Lawrence to Tennessee on the south-west — from the Mississippi valley on the west, from the States of Iowa, Illinois, Wisconsin, the islands of Lake Huron, and Canada West (Ontario), together with the more critical study of the rocks and fossils within the limits of the State of New York — are all to be set aside, and a simple *assertion*, unsupported by sections, by fossils, and I may say by a single fact of importance, is to be substituted for all the labors of thirty years.

This assertion comes from a gentleman holding the important and responsible position of State Geologist of Illinois, whose name is associated with so much of the geology and paleontology of the west as to give currency, if not authority and authenticity, to what he may say: — and certainly he ought not, without good reason and authentic data, make such assertions nor put such a paper before the American Association for the Advancement of Science.

But will the geologists of the United States accept this so-called determination of the identity of the groups of strata known as the NIAGARA and the LOWER HELDERBERG?*

But Mr. Worthen is not original in this view of the relations of the two groups of strata. He has merely revived an old and discarded error. The same assertion was long ago made in the Geological Reports of Pennsylvania and elsewhere; and was at one time the generally accepted belief among geolo-

* Of late years, in certain quarters, it has been only necessary to contradict what has been done in the State of New York, or by persons in her employ, both in geology and palæontology, to have the statement accepted on bare assertion. I might instance examples too numerous to be creditable to the acumen and good sense, to say nothing of the scientific ability, of those who propose or accept such conclusions.

gists. Professor Rogers, in a paper upon Niagara Falls, published, I believe, in 1832, takes this view of the relations of these formations, and includes also the limestone of Black Rock under the same designation. It is not surprising that at that period, when no critical examinations had been made, when we had no knowledge of palæontology as a guide in the more obscure and difficult points, that great surface features should have been taken as guides in the determination of geological formations. It happened in this case that the great escarpment of the Niagara at Lewiston and Queenstown was regarded as the extension of that of the Helderberg and the south side of the Mohawk valley. The limestone of Black Rock, though so far separated from Niagara, was regarded as a part of the same ; the features in the west being more subdued, as was supposed.

This, in brief, was the condition of our knowledge and belief regarding these formations at the beginning of the New York Geological Survey, and for some time afterward.

The one horizon which, above all others, was at that time regarded as fixed beyond question was that of the salt-bearing strata. This formation, at its base bearing a great thickness of red and mottled shales and marls, succeeded by gray, ash or drab colored beds of similar characters, and finally hard beds of limestone, was regarded as clearly defined from Saltspringville in the Mohawk valley, by way of Syracuse, Montezuma, and thence westward along the base of the Limestone Terrace from Rochester to Lewiston.

Throughout this entire extent salt springs had been discovered, and brines of varying and different qualities were known to exist. No doubt of the nature, age or identity of the formation, from Herkimer county to the Niagara river at Lewiston, had ever been expressed, or, so far as I know, entertained by any one. Now, though this may seem irrelevant to the question before us, it nevertheless lies at the foundation of the error then prevalent, regarding the Niagara and Helderberg formations ; and is intimately connected with the greater error now sought to be revived in the paper under consideration.

It was not until the close of the field work of 1838 that this question came before the assembled members constituting the Commission of the New York Geological Survey. The young-

est member of that body had asserted, as the result of his investigations, that the rocks at the base of the Niagara Terrace, consisting of red, gray and mottled marls and sandstones, were not the continuation of the salt-bearing beds of Onondaga, and elsewhere to the eastward, but a lower formation; that the Niagara limestone, so largely developed at Niagara and Lockport, was not a continuation of the limestone of the Helderberg, but a distinct formation, having its greatest development toward the west, and gradually thinning to the eastward; and that instead of lying above the Salt formation, it lay beneath it; that the Salt formation, extending westward from Syracuse, passed to the southward of the Niagara Terrace, and formed the broad belt of flat country to the south of the range, which is so marked a feature from the Genesee river south of Rochester to the Niagara river at Tonawanda; thus separating, by a distance of several miles, the limestone of Niagara and that of Black Rock.

The conditions which originally led to this misapprehension of the relations of the different formations, are, the flat marshy country from the outlets of Seneca and Cayuga lakes to the northward, which has obscured the outcrops, and beyond this, in Wayne county, the great accumulation of drift, which has deeply covered the rock over a large area. If to these we add, that in the earlier geological explorations the line of the Erie canal was that principally traveled, — that the passage from the red and gray marls of the Onondaga region to the red and mottled marls of the Medina Sandstone at Rochester and westward of the Genesee river was through an alluvial or drift country which concealed the underlying rock formations, — the supposed identification of the two formations is not surprising.

That such views should prevail before continued and connected observations had been carried on, we are prepared to understand; but after nearly forty years of observation, and after the relations of all these rocks have been fully understood for thirty years or more, I submit that it is not worthy of the credit of the American Association to allow such a paper to pass into its publications without serious consideration. Personally I may be interested in this question more than others, since I have published a volume principally upon the palæontology of the formation or group here proposed to be dis-

carded as having no separate or distinct existence in the series; but the science of geology, and those who pursue that science, have an interest in this question far superior to one of mere personality.

Geological relations and geographical extension of the groups in question.

Starting from the typical locality of the Niagara group, where, of the shale and limestone, we have a thickness of something more than two hundred feet, and tracing the outcrop in an easterly direction, we find a very gradual but pretty constant thinning of the beds of the formation, so that at a point one hundred miles east of the Niagara river it has a thickness of scarcely one hundred feet. Farther east, in Oneida county, the formation is still thinner, and in some places has become in part or almost entirely a brecciated and concretionary mass, with few or no fossils.*

Going eastward it becomes still further attenuated, but can still be traced both in its physical aspect and outcrop, and by its fossil contents. In the neighborhood of Schoharie, Cobleskill, Cherry Valley, etc., it is known as the Coralline Limestone, from its abundance of corals. These are principally identical with the corals of the Niagara group in western New York; and most of the species of Brachiopoda, which occur in a condition to be recognized, are similar or identical with Niagara forms, while there are several species quite distinct from those of the Niagara group in the west. The upper limit of *Halysites catenulatus*, so far as known in New York, is in the Niagara limestone; and this fossil occurs in the coralline limestone at Schoharie and at Litchfield, in Herkimer county.

I have given in vol. ii, Pal. N. Y., p. 321, more at length my reasons for regarding this coralline limestone as the easterly continuation of the Niagara group; and since the time of that publication I have made numerous observations upon the

* In that part of the State the formation is so insignificant, that it was origir ally regarded by Mr. Vanuxem as a subordinate member of the Protean or Clinton group; and was only recognized by him as a distinct formation in 1839; after the investigations in the western counties had shown its true relations and importance.

relations of the coralline limestone, all of which have tended to confirm the views there expressed. This coralline limestone in its attenuated form may be recognized in the valley of the Hudson river underlying the water-lime formation at numerous localities.

Now returning along this line of outcrop to the Niagara river, and following the formation to the north-west, we find it expanding in thickness and area through Canada West to Cabot's Head; appearing in the islands along the eastern and northern side of Lake Huron, and stretching across the peninsula from St. Joseph's river to the outlet of Green Bay; thence occupying the principal part of the peninsula between Green Bay and Lake Michigan, it expands to the southward beyond the southern limits of that lake, and thence trends to the west and north-west through Illinois and Iowa. From the Niagara river westward, the formation is chiefly a magnesian limestone, and in many localities carries an abundance of fossils; both the physical and palæontological evidence leave no doubt as to the age and relations of the formation.

Returning again to the eastward and southward, we find that the anticlinal movement, which elevated the islands in the western part of Lake Erie, has brought up the Niagara formation in the adjacent parts of Ohio, where it is marked by the presence of a greater or less proportion of its characteristic fossils. Here it stretches in a low axis for miles to the south of the lake, and thence spreads and outcrops on either side of the rocks of the Hudson river and Trenton age, which form the central or lower visible portion of the Cincinnati axis.

Following this direction it extends through Kentucky and Tennessee, everywhere carrying its characteristic fossils.

Throughout all this extent, until the formation reaches Tennessee, there is no question raised as to the identity and purity of the Niagara group. Here, it is said that the fossils of the Niagara are mingled with those of the Lower Helderberg group. And again, on the Mississippi river, in Illinois and Missouri, we are told that this mingling of the fossils of the two periods occurs.

But before proceeding to discuss this part of the question, let us for a moment give attention to what is termed the Lower Helderberg group in its typical localities.

In the Helderberg mountains in Albany county, and in Schoharie, along the valley of the Schoharie creek, and in the Cobleskill valley, we find everywhere a series or group of limestones, of which we distinctly recognize four members; these are known in the ascending order, as Tentaculite limestone, Lower Pentamerus limestone, Shaly limestone and Upper Pentamerus or Scutella limestone. There is, in some places, for miles in extent, a mass of Stromatopora limestone between the Tentaculite and Lower Pentamerus limestones. These together constitute the Lower Helderberg group, forming in Albany county the base of the Helderberg mountains, and everywhere succeeded by the Oriskany sandstone, Cauda-galli and Schoharie grit and Corniferous limestone; and these, in the summits of the hills, by the arenaceous shales of the Hamilton group.

This group of limestones is everywhere characterized by the presence of fossils, often in immense numbers, and specifically, with very few exceptions, quite unlike the fossils of the rocks above or below this horizon. From the Helderbergs, and the valley of the Schoharie, we are able to trace the formation to the westward through the northern part of Otsego, and the southern part of Herkimer and Oneida counties; and, according to Mr. Vanuxem, it is recognized in the eastern part of Onondaga county, by the presence of some of its peculiar fossils. From the Helderberg mountains the group gradually thins to the westward; and in Herkimer county the divisions of the several members are scarcely recognized, the entire mass becoming more completely calcareous, but still charged with an abundance of the characteristic fossils of the group. West of Onondaga county the place of the formation is often recognized by a stratum of hard, compact limestone lying beneath the Oriskany sandstone.* It is quite evident that the force of the entire group diminishes in a westerly direction.

Returning to the point of departure in the Helderbergs, we are able to trace the rocks of this group, in their clearly defined and unmistakable characters, through the eastern counties of New York to the limits of the State of New Jersey. In

* In some former Reports on the geology of the western counties, this rock is described as worn or eroded previous to the deposition of the Oriskany sandstone.

the north-west part of that State the formation has been distinctly recognized by Professor Cook. The same has been fully described as the "Limestone formation, No. VI," in the Geological survey of Pennsylvania, in which State it appears in numerous outcrops, and extends thence through the western part of Maryland and through Virginia, along the Appalachian range into Tennessee.

Nowhere throughout this extent of country, as far as Virginia, has any one shown, or attempted to show, the mingling of Lower Helderberg and Niagara forms among the fossils. In the large collections which I possess from Maryland and Virginia, I have never observed the least evidence of such mingling; and in Maryland and the adjacent parts of Virginia (I can speak from personal observation) the formation is as well defined, physically, as in any part of New York.

Let us now look to the north-east, where the Geological survey of Canada has traced the Lower Helderberg formation from Montreal to Gaspè. Having examined large collections of these fossils from the Gaspè region, and others from near Montreal, I have never seen the least indication of a mingling of any other forms with those characteristic of the Lower Helderberg.

We have now traced this formation from the forty-third parallel in the State of New York to about the thirty-fifth parallel of latitude in Tennessee, and over the greater part of this extent we have no knowledge of a mingling of the fossils of the two groups or formations. Again, from the vicinity of Montreal to Gaspè, a distance of some seven hundred miles, the formation, wherever known, carries its characteristic fossils.

This group is likewise recognized in the State of Maine, where it is characterized by numerous well-known fossils; and it is not improbable that it may be equally so in the eastern townships of Canada and in the belt of limestones extending through Vermont to the northern part of Massachusetts.

Having thus hastily sketched the ground occupied by these two groups of strata, we may now consider their relations to each other, and the evidence of the mingling of the fossils which would render it necessary to relieve the nomenclature

of geology of one of these names, heretofore adopted, and in general use wherever geology is written or spoken.

I will here cite a single sentence from the paper referred to:

"We recollect that, on visiting the locality of these so-called Lower Helderberg limestones in the Schoharie valley some years ago, we observed these limestones resting immediately upon undisputed Lower Silurian beds there; and, in explanation of their occurrence in this apparent abnormal position, we were told that the Niagara group was supposed to have thinned out to the eastward, and that these Lower Helderberg limestones took their place."

Fortunately or unfortunately there is no evidence given as to the authority or by whom "*we were told*" that the Niagara group was supposed to have thinned out to the eastward. In the first place let us inquire as to the fact of the Lower Helderberg "limestones resting immediately upon undisputed Lower Silurian beds there" or elsewhere. Having been familiar with the Schoharie valley, and having made numerous sections, and explored long lines of outcrop in that valley, in the Cobleskill valley and in the Helderberg, I have never been able to see the Lower Helderberg limestones resting upon Lower Silurian rocks. On the contrary, the section of strata everywhere shown is the following, as given on the diagram, from the sandstones of the Hudson river group to the Oriskany sandstone:

	Oriskany sandstone.
Lower Helderberg group.	Upper Pentamerus limestone.
	Shaly limestone.
	Lower Pentamerus limestone.
	Tentaculite limestone.
	Water-lime formation.
Niagara group =	Coralline limestone.
	Green shales with Iron pyrites.
Lower Silurian	Sandstones and shales of the Hudson river group.

Everywhere the lower member of the Lower Helderberg group is unmistakably separated from the sandstones of the

Lower Silurian age by three distinct and usually well-marked members of the series.

Tracing the Lower Helderberg formation from this point for sixty miles westward, we have the following section:

Oriskany sandstone.
Lower Helderberg group { * Shaly and lower Pentamerus limestones.
Tentaculite limestone.

Water-lime formation.

Onondaga salt group = Red and gray marls.

Niagara group = Coralline limestone.

Clinton group = { Green shales and sandstones with calcareous bands containing interstratified beds of red hematite.

Medina sandstone.

Lower Silurian = Gray and bluish-gray sandstones and shales of the Hudson river group.

Everywhere the lower member of the Lower Helderberg group rests upon the water-lime formation; and the latter is always present, separating the former from the Coralline or Niagara limestone. At a distance less than one hundred miles farther west, in a line from Seneca or Ontario to Oswego county, we have a section showing the following formations:

Oriskany sandstone.
Lower Helderberg group represented by { Compact grayish-blue limestones in a band of a few feet in thickness.
Water-lime formation.
Onondaga salt group with salt springs and gypsum beds, more than 1,000 feet in thickness.
Niagara group.
Clinton group.
Medina sandstone.
Hudson river group.

* The Upper Pentamerus limestone is not developed as a distinct member of the group.

At this point the Niagara group is separated from the continuation of the Lower Helderberg group by strata of more than 1,000 feet in thickness.

Everywhere throughout New York the Lower Helderberg group is underlaid by the water-lime formation; and the same is true in New Jersey, Pennsylvania, Maryland and Virginia; and everywhere throughout New York and Canada West, and in Wisconsin and Iowa the water-lime formation lies above the Niagara group, or its representative, the Coralline limestone.* In no case do these two formations come together, except where the water-lime formation is absent.

Certainly these formations are widely enough separated to constitute distinct groups over the areas named.

It is suggested in the paper cited that the difference between the fossils of the Lower Helderberg group in eastern New York, and those of the Niagara group in the central and western part of the State, is due to "a change in the lithological character of the beds in their eastern extension."

In the western part of the State, the Niagara group is composed of calcareous shales and dolomites. The Lower Helderberg group in the eastern part of the State consists, in its lower part, of thick and thin bedded dark or black limestones, with shaly partings, and sometimes with thicker intercalated shaly layers; to these succeed the heavy bedded limestone with *Pentamerus galeatus*, which by the intercalation of shaly matter becomes thin bedded, and passes by almost insensible gradations into the "Shaly Limestone," and finally to a silico-calcareous shale.† The higher member, in many localities, is the thin bedded Upper Pentamerus limestone, while at Becraft's mountain and in the Helderberg the upper member is a heavy-bedded encrinal limestone, sometimes known as the Scutella limestone, from the presence of great numbers of the bases of *Aspidocrinus*. The shales of the Niagara group and their contained bands of limestone, which are the most highly fossiliferous portion of the group in New York, are not dolo-

* It is true that over a considerable part of the lake region, the water-lime and Onondaga salt group have been eroded from above the Niagara formation; the place of these softer formations being occupied by the lakes. See Foster and Whitney's Report on the Lake Superior Land District.

† The physical aspect of this portion of the group is preserved in the "*siliceous timestones*" of this age in the south-west.

mitic; and it seems a most extravagant supposition that the slight lithological differences in the composition of the strata could produce an *entire change* in the fauna, presuming the deposits to be of the same age.

We now come to the consideration of the last paragraph of this remarkable paper, in which we have the following summary:

"To recapitulate, then, the facts as they are presented in the west; we find that the dolomites of northern Illinois contain only Niagara fossils, and the siliceous limestones of the southern portion of the State, only those considered characteristic of the Lower Helderberg group; while the beds in Tennessee, occupying the same stratigraphical position with the dolomites and the siliceous limestones of Illinois, have Niagara and Lower Helderberg fossils mingled indiscriminately through the strata. Hence we conclude that the so-called Lower Helderberg group has no real existence as a distinct group of Upper Silurian strata, and that the name, being superfluous, should be dropped from the nomenclature of the American rocks."

The value of this conclusion will be best appreciated from the fact that in southern Illinois and adjacent parts of Missouri the limestones holding the characteristic Niagara fossils lie beneath those containing the characteristic Lower Helderberg fossils; and that we *never* "have Niagara and Lower Helderberg fossils indiscriminately mingled through the strata;" unless it be in the débris along the outcrop; and I assert this from my own observation. The same is true of the beds in Tennessee; and though the collections of fossils made on the outcrops and among the débris do contain fossils of the Niagara and Lower Helderberg formations mingled together, this is not true of the rocks *in situ*. In this opinion I do not rest alone; and it is only necessary to consult the report of Professor Safford to show that he finds both the rocks and fossils of the Lower Helderberg formation distinctly separated from, and lying above, those of the Niagara group.

In some localities Professor Safford asserts that he finds fossils of the two formations mingling *along the line of contact*, which, in the absence of all intervening beds, may very well happen. And this fact, so far from proving the identity or synchronism of the formations, is a very important proof of their distinction in order and in time.*

* We may inquire, also, whether it may not be inferred that the living organisms of the Lower Helderberg period were spread over a sea bottom covered with the dead organisms of the preceding period and became mingled in this manner.

In reviewing the facts, and considering the known range and extent of the Niagara and Lower Helderberg groups, their close approximation or actual contact over large areas, and their wide separation in other places, we are compelled to the conclusion that there are no two groups, of similar composition, in the entire palæozoic series, which are so clearly distinct and which can be unmistakably traced over so wide an area of country, both in their physical and lithological character, as well as in their contained fossils.

That there are designations among some of the formations which are superfluous, we are willing to admit; but the proposition to drop from the system one of the most widely distributed formations of the country, whose geological position and relations, and the fossil contents of which are so well known, is scarcely the proper mode of improving "the nomenclature of the American rocks."

[Note. — The Map, in illustration of the above article, which was to have accompanied it, is unavoidably deferred. It will appear in the following (28th) State Museum Report.]

(Published May, 1874, in advance of the Report.),

DESCRIPTIONS OF NEW SPECIES OF GONIATITIDÆ.

WITH A LIST OF PREVIOUSLY DESCRIBED SPECIES.

By JAMES HALL.

Goniatites complanatus *Hall.*

Clymenia? complanata Hall, Geol. N. Y. Pt. IV, 1843, pp. 243-4, fig. 100 (5).

This species was described in the Geological Report of the 4th district in 1843 from very imperfect material, and referred, with doubt, to the genus Clymenia. An examination of other specimens, having the same external form, shows them to possess the structure of Goniatites.

Goniatites complanatus *var.* perlatus.

Shell large, subdiscoid; volutions four or more, embracing, the inner ones being concealed for about half their breadth, leaving a broad shallow umbilicus; in form the volutions are usually compressed or flattened; but when not compressed the back is sharply rounded and gradually increasing in thickness for about three-fourths of the width, from which point they are rather abruptly rounded to the inner margin. Septa moderately distant; less than five chambers occupying a space equal to the width of the volution at the part measured; there are three saddles on each side of the very small dorsal saddle, each of them rounded; the ventro-lateral lobe also forming a shallow curve, while the dorso-lateral lobe is somewhat acutely pointed and proportionally deep.

Surface marked by fine, even, closely arranged, regular, thread-like striæ, with a slight backward curvature on the side of the shell, and are again sharply directed forward along the dorso-lateral portion with a deep sinus on the dorsum.

This shell differs from the *C. complanatus* principally in the form of the dorso-lateral lobe of the septa, which in this is

deep and acutely pointed, while in *complanatus* it is rounded. It differs from *C. Nundaia* in the rounding of the ventro-lateral lobe, while in that species both lobes are acutely pointed.

Formation and locality.—In the lower part of the Chemung group, at Homer, Cortland county, and near Truxton, N. Y.

Goniatites unilobatus *Hall.*

Shell, rather below the medium size, subdiscoidal; volutions, three or four, deeply embracing, leaving only a moderate open umbilicus, in which is seen only about one-fourth or less of the inner whorls; the volutions are flattened or slightly concave on the dorsum, which is about a twelfth of an inch in width on a specimen of one inch diameter; sides gently swelling from the subcarinate angles of the dorsum to near the inner border, then abruptly rounded into the umbilicus. Septa moderately distant; four chambers occupying a space equal to the width of the volution at the part measured. From the margin of the umbilicus, the septa curve gently backward, and then forward with a broad curve, reaching their greatest anterior extension a little within the dorsal angle; from there they bend abruptly backward and form a narrow dorsal lobe slightly truncated at the extremity, giving a single broad lateral lobe extending nearly the width of the volution.

Surface marked by fine, even, distant thread-like striæ, with curvatures nearly in the direction of the septa, but with the flexures not quite so extreme.

This species differs from all others noticed from the rocks of New York, in the form of the septa and the flattened dorsum.

Formation and locality.—In the Hamilton shales, from the shore of Cayuga lake, N. Y.

Goniatites simulator *Hall.*

Shell of medium size, consisting of three or more moderately convex volutions, which are closely coiled, leaving only a moderate, rather abrupt umbilicus, but slightly exposing the inner whorls. The volutions are thickest near their inner margins, from this they gradually decline with a rounded surface to the narrowly rounded back. Septa closely arranged

and strongly lobed; the ventro-lateral lobe broadly rounded and shallow; the dorso-lateral lobe deep and acutely rounded, with a strong highly-arched lateral saddle between, extending two-thirds the width of the volution; dorsal saddles broad, extending only about half as high as the lateral saddles, or less, and marked by a very short, obtusely-pointed, or truncate dorsal lobe between.

Surface unknown.

This species differs from other American species known to me in the general form, the character of the septa and size of the umbilicus. It is somewhat closely related to *G. lamellosus* Sanberger (Tab. viii, fig. 1c. *Verstein. des Rheinischen Systems in Nassau*), but differs from it in the smaller umbilicus and somewhat different septa.

Formation and locality.—In the Chemung group, near Ithaca, N. Y.

Goniatites (Clymenia?) Nundaia *Hall.*

Goniatites sinuosus, in part.

Shell large, discoid; volutions very much compressed laterally, with slightly convex sides and sharply rounded back; the outer volutions partially embracing the inner, leaving a broad, shallow, open umbilicus, in which is exposed to view from one-half to two-thirds of the entire width of the inner volutions. Septa somewhat closely arranged, when measured in the middle of the volution, from six to seven occupying a space equal to the breadth of the volution where measured. The septa are strongly marked by lobes and saddles; of the latter there are three in the breadth of the volution, the central one nearly as wide as the other two, the lobes deep, acutely pointed, the dorso-laterals much deeper and more acute than the ventrals: the dorsal lobe deep, and divided in the middle by a minute dorsal saddle.

This species appears to possess the characters of both Goniatites and Clymenia, having the general form of Clymenia, while the more deeply lobed septa are intermediate in form between those of the two genera in their typical forms. It differs from *G.* (*C.*) *complanatus* of the Genesee slate and Portage group by its much greater size and more deeply marked lobes and saddles. The specimens are subject to considerable variation from compression or other causes,

especially in the apparent extent to which the inner volutions are embraced by the outer ones.

Formation and locality.— In the Portage group, at Portage, N. Y.; and in the Chemung group, at Ithaca, N. Y.

GONIATITES CHEMUNGENSIS *var.* EQUICOSTATUS *Hall.*

Among the Goniatites of the Chemung group, there is a single individual bearing considerable resemblance to the *G. Chemungensis* of Vanuxem (*Report of the Third Geol. District of New York*, 1842, p. 179, f. 48[2]), but still differing too much to be considered specifically identical. The form of septa cannot be distinctly determined, but enough is seen to show that they have the general characters of that species; but the volutions are more slender, and apparently more ventricose, and the transverse ridges are more prominent, more closely arranged, and extend more nearly across the volution. At present it is indicated as a variety, until other specimens may show more decidedly its true relations. The following diagnosis gives the principal characters seen in the specimen:

Shell of medium size; volutions numerous, slender and partially embracing, leaving a very broad, open umbilicus, in which about one-half of each of the inner volutions is exposed. Dorso-ventral diameter of the volutions nearly once and a half as great as the lateral diameter, crossed by strong transverse rounded ridges which are faintly marked or become obsolete on the dorsum, and are strongest near the ventro-lateral region; the spaces between the ridges are rounded, and of about the same width as the ridges. Septa divided into several deeply marked lobes and saddles.

Surface of the shell marked by fine, transverse ridges, and, in some places, there are indications of fine revolving striæ. This feature may possibly be the result of some external cause.

Formation and locality.— In the Chemung group, near Athens, Pennsylvania.

The following species of this family have been described from the Geological formations of New York:

	Upper Helderberg.	Marcellus Shale.	Hamilton Group.	Genesee Slate.	Portage Group.	Chemung Group.
Goniatites bicostatus					*	
G. Chemungensis						*
G. Ch. *var.* equicostatus						*
G. complanatus					*	
G. comp. *var.* perlatus						*
G. discoideus		*	*	*		
G. (Clymenia?) erato			*			
G. expansus=*G. Marcellensis*		*				
G. mithrax	*					
G. Nundaia					*	*
G. orbicella			*			
G. Patersoni					*	*
G. uniangularis		*	*		*?	
G. unilobatus			*			
G. sinuosus					*	

ENTOMOLOGICAL CONTRIBUTIONS.

By J. A. LINTNER.

I. LIST OF CATOCALAS,

OCCURRING IN THE STATE OF NEW YORK.

1. **amatrix** (Hübner). Guen. Noctuélites, 1852, III, p. 86. Grote, Trans. Amer. Ent. Soc., 1872, IV, p. 7. Strecker, Lep. Rhopaloc.-Heteroc., 1874, p. 98, pl. xi, f. 15 ♂, 16 ♀. Var. *nurus* Walker.
2. **androphila** Guenée. Noct., III, p. 106. Grote, Trans. Amer. Ent. Soc., IV, p. 18. *Corisce amica* Hübner
3. **antinympha** (Hübner). Grote, Trans. Amer. Ent. Soc., IV, p. 13. Strecker, Lep. Rhop.-Heteroc., p. 36, pl. 5, f. 7 ♀. *C. melanympha* Guen., Noct., III, p. 98.
4. **badia** Grote-Robinson. Proc. Ent. Soc. Ph., 1866, VI, p. 22, pl. 4, f. 1 ♂. Grote, Trans. Am. Ent. Soc., IV, p. 12.
5. **Briseis** Edwards. Proc. Ent. Soc. Ph., II, p. 508. Grote, Trans. Am. Ent. Soc., IV, p. 5. Streck., Lep. Rhop.-Heteroc., p. 20, pl. 3, f. 7 ♀.
6. **cara** Guenée. Noct., III, p. 87. Grote, Trans. Am. Ent. Soc., IV, p. 7. Strecker, Lep. Rhop.-Heteroc., p. 98, pl. xi, f. 14 ♂.
7. **cerogama** Guenée. Noct., III, p. 96. Grote, Trans. Am. Ent. Soc., IV, p. 9. Streck., Lep. Rhop.-Heteroc., p. 22, pl. 3, f. 10 ♀.
8. **Clintonii** Grote. Proc. Ent. Soc. Ph., III, p. 89, pl.3, f. 4 ♀. Streck., Lep. Rhop.-Heteroc., p. 35, pl. 5, f. 6 ♀.
9. **concumbens** Walker. Cat. Lep. Br. Mus., no. 1198. Saunders, Proc. Ent. Soc. Ph., II, p. 29, larva. Grote, Trans. Am. Ent. Soc., IV, p. 7. Streck., Lep. Rhop.-Heteroc., p. 39, pl. 5, f. 12 ♂.

10. desperata Guenée. Noct., III, p. 95. Grote, Trans. Am. Ent. Soc., IV, p. 3. Streck., loc. cit., p. 33, pl. 5, f. 2 ♂.

11. Epionè (Drury). Guen. Noct., III, p. 93. Grote, Trans. Am. Ent. Soc., IV, p. 2.

12. flebilis Grote. Trans. Am. Ent. Soc., IV, p. 4. Streck., loc. cit., p. 71, pl. ix, figs. 3 ♂, 4 var. ♂.

13. formula Grote-Robinson. Proc. Ent. Soc. Ph., VI, p. 27, pl. 4, f. 5 ♂. Grote, Trans. Am. Ent. Soc., IV, p. 16.

14. fratercula Grote-Robinson. Proc. Ent. Soc. Ph., VI, p. 24, pl. 4, f. 3 ♂. Grote, Trans. Am. Ent. Soc., IV, p. 17. Streck., loc. cit., p. 37, pl. 5, f. 8 ♂.

15. gracilis Edwards. Proc. Ent. Soc. Ph., II, p. 511. Grote, Trans. Am. Ent. Soc., IV, p. 17. *C. similis* Edw., Proc. Ent. Soc. Ph., II, p. 511.

16. habilis Grote. Trans. Am. Ent. Soc., IV, p. 11.

17. Ilia (Cramer). Guen. Noct., III, p. 91. Grote, Trans. Am. Ent. Soc., IV, p. 8.

18. innubens Guenée. Noct., III, p. 98. Grote, Trans. Am. Ent. Soc., IV, p. 8. Var. *scintillans* Gr.-Rob., Proc. Ent. Soc. Ph., VI, p. 28, pl. 4, f. 6 ♂; var. *flavidalis* Grote, Trans. Am. Ent. Soc., Sept., 1874, p. —.

19. insolabilis Guenée. Noct., III, p. 94. Grote, Trans. Am. Ent. Soc., IV, p. 3. Streck., loc. cit., p. 33, pl. 5, f. 1 ♂.

20. Levettei Grote. Trans. Am. Ent. Soc., Sept., 1874, p. —. *C. Judith* Streck., loc. cit., p. 95, pl. xi, f. 5 ♂.

21. lineella Grote. Trans. Am. Ent. Soc., IV, p. 18.

22. Meskei Grote. Canadian Entomologist, 1873, V, p. 161.

23. muliercula Guenée. Noct., III, p. 97. Grote, Trans. Am. Ent. Soc., IV, p. 12. Streck., loc. cit., p. 74, pl. ix, f. 9 ♂.

24. minuta Edwards. Proc. Ent. Soc. Ph., II, p. 512. Grote, Trans. Am. Ent. Soc., IV, p. 17. *C. parvula* Edw., Proc. Ent. Soc. Ph., II, p. 512.

25. nebulosa Edwards. Proc. Ent. Soc. Ph., II, p. 510. Streck., loc. cit., p. 75, pl. ix, f. 11 ♀. *C. ponderosa*, Gr.-Rob., Proc. Ent. Soc. Ph., VI, p. 23, pl. 4, f. 2. Grote, Trans. Am. Ent. Soc., IV, p. 11.

26. **neogama** Guenée, (? Smith-Abbott). Guen. Noct., III, p. 96. Grote, Trans. Am. Ent. Soc., IV, p. 9. Streck., loc. cit., p. 35, pl. 5, figs. 4, 5. *C. communis* Grote.

27. **nuptula** Walker. Cat. Lep. Br. Mus., no. 1205. *C. grynea* (Cramer) Grote, Trans. Am. Ent. Soc., IV, p. 16.

28. **obscura** Strecker. Lep. Rhop.-Heteroc., 1873, p. 19, pl. 3, f. 4 ♂.

29. **palæogama** Guenée. Noct. III, p. 97. Grote, Proc. Ent. Soc. Ph., III, p. 87, pl. 3, f. 2, ♂; Trans. Am. Ent. Soc., IV, p. 10; var. *phalanga*, Proc. Ent. Soc. Ph., III, p. 86, pl. 3, f. 1 ♂.

30. **parta** Guenée. Noct., III, p. 84, pl. 16, f. 1 ♂. Grote, Trans. Am. Ent. Soc., IV, p. 6. Streck., loc. cit., p. 38, pl. 5, f. 10 ♀; var. *perplexa*, p. 38, pl. 5, f. 11 ♂.

31. **piatrix** Grote. Proc. Ent. Soc. Ph., III, pp. 88, 532, pl. 3, f. 3 ♂; Trans. Am. Ent. Soc., IV, p. 10. Streck., loc. cit., p. 74. pl. ix, f. 8 ♂.

32. **polygama** Guenée. Noct., III, p. 105, pl. 16, f. 2 (poor). Grote, Trans. Am. Ent. Soc., IV, p. 15. Reed, Canad. Entomol., 1869, II, p. 30, larva.

33. **præclara** Grote-Robinson. Proc. Ent. Soc. Ph., VI, p. 25, pl. 4, f. 4 ♂. Grote, Trans. Am. Ent. Soc., IV, p. 17.

34. **relicta** Walker. Cat. Lep. Br. Mus., no. 1193. Grote, Trans. Am. Ent. Soc., IV, p. 4. Streck., loc. cit., p. 19, pl. 3, figs. 5 ♂, 6 ♀.

35. **residua** Grote. Proc. Bost. Soc. Nat. Hist., XVI, 1874, p. 242.

36. **retecta** Grote. Trans. Am. Ent. Soc., IV, p. 4. Streck., loc. cit., p. 71, pl. ix, f. 2 ♂.

37. **Robinsonii** Grote. Trans. Am. Ent. Soc., IV, p. 20. Streck., loc. cit., p. 71, pl. 9, f. 1 ♂.

38. **serena** Edwards. Proc. Ent. Soc. Ph., II, p. 510. Grote, Trans. Am. Ent. Soc., IV, p. 13. Streck., loc. cit., p. 23, pl. 3, f. 11 ♀.

39. **subnata** Grote. Proc. Ent. Soc. Ph., III, p. 326, pl. 4, f. 5 ♂; Trans. Am. Ent. Soc., IV, p. 9. Streck., loc. cit., p. 34, pl. 5, f. 3 ♀.

40. tristis Edwards. Proc. Ent. Soc. Ph., II, p. 511. Grote, Trans. Am. Ent. Soc., IV, p. 4. Streck., loc. cit., p. 17, pl. iii, f. 1 ♂.

41. ultronia (Hübner). Guen. Noct., III, p. 89. Packard, Guide St. Ins., 1869, p. 317, pl. 8, f. 4 ♀, *a*, larva. Grote, Trans. Am. Ent. Soc., IV, p. 6. Streck., loc. cit., p. 73, pl. ix, f. 7 ♀. Saunders, Canad. Entomol., VI, pp. 147–9 larva.

42. unijuga Walker. Cat. Lep. Br. Mus., no. 1194. Grote, Trans. Am. Ent. Soc., IV, p. 5. Streck., loc. cit., p. 37, pl. 5, f. 9 ♂.

II. LIST OF NEW SPECIES OF NEW YORK LEPIDOPTERA,

PUBLISHED IN 1873.

LYCÆNIDÆ.

Callicista ocellifera *Grote*. Bull. Buff. Soc. N. S., I, p. 178.

SPHINGIDÆ.

Hemaris tenuis *Grote*. Bull. Buff. Soc. N. S., I, p. 4.

NOCTUIDÆ.

Acronycta connecta *Grote*. Bull. Buff. Soc. N. S., I, p. 79.
Acronycta sperata *Grote*. Ib., p. 81.
Agrotis pitychrous *Grote*. Ib., p. 82.
Agrotis mimallonis *Grote*. Ib., p. 98.
Agrotis fumalis *Grote*. Ib., p. 98.
Agrotis herilis *Grote*. Ib., p. 99.
Agrotis sexatilis *Grote*. Ib., p. 100.
Ammoconia badicollis *Grote*. Ib., p. 136, pl. 4, f. 18 ♀.
Mamestra claviplena *Grote*. Ib., p. 194.
Dianthœcia meditata *Grote*. Ib., p. 104.
Hadena turbulenta *Grote*. Ib., p. 180.
Hadena sputator *Grote*. Ib., p. 190.
Cloantha evicta *Grote*. Ib., p. 84.
Cloantha vomerina *Grote*. Ib., p. 84.
Ommatostola Lintneri *Grote*. Ib., p. 112.
Ablepharon Henrici *Grote*. Ib., pp. 10, 112.
Ablepharon evanida *Grote*. Ib., pp. 10, 112.
Leucania Harveyi *Grote*. Ib., p. 9.
Ufeus satyricus *Grote*. Ib., p. 100, pl. 3, f. 4 ♀.
Caradrina miranda *Grote*. Ib., p. 11.
Ipimorpha pleonectusa *Grote*. Ib., p. 191.
Anytus sculptus *Grote*. Ib., pp. 114, 145, pl. 3, f. 1.
Adipsophanes miscellus *Grote*. Ib., p. 181.
Plusia Putnami *Grote*. Ib., pp. 146, 192, pl. 4, f. 2 ♂.
Plusia contexta *Grote*. Ib., p. 193.
Plusia striatella *Grote*. Ib., p. 194.
Plagiomimicus pityochromous *Grote*. Ib., p. 182.

Tarache terminimaculata *Grote*. Ib., p. 153.
Catocala Meskei *Grote*. Canad. Entomol., V, p. 161.
Catocala obscura *Strecker*. Lep. Rhopaloc.-Heteroc., p. 19.
Catocala retecta *Grote*. Trans. Am. Ent. Soc., IV (1872),* p. 4.
Catocala habilis *Grote*. Ib., p. 11.
Catocala lineella *Grote*. Ib., p. 18.
Homohadena badistriga *Grote*. Ib., p. 20.
Marasmalus ventilator *Grote*. Ib., p. 89.
Marasmalus histrio *Grote*. Ib. (1873), p. 297.
Sudariophora callitrichoides (*Grote*). Ib., p. 90 (*Phyprosopus*)

PHALÆNIDÆ.

Eupithecia vernata *Packard*. 5th Ann. Rep. Peab. Acad. Sci., p. 57.
Eupithecia palpata *Pack*. Ib., p. 58.
Eupithecia interrupto-fasciata *Pack*. Ib., p. 59.
Macaria duplicata *Pack*. Ib., p. 65.
Eumacaria brunneata *Pack*. Ib., p. 67.
Aplodes approximaria *Pack*. Ib., p. 73.
Aplodes latiaria *Pack*. Ib., p. 74.
Synchlora rubrifrontaria *Pack*. Ib., p. 75.
Cleora pellucidaria *Pack*. Ib., p. 78.
Heterolocha sulphuraria *Pack*. Ib., p. 79.
Phasiane mellistrigata *Grote*. Bull. Buff. Soc. N. S., I, p. 12.
Mellilla chamæchrysaria *Grote*. Ib., p. 13, pl. 1, f. 1 ♂.
Eurymene excavaria *Morrison*. Ib., p. 189.
Macaria galbineata *Zeller*. Beit. Kennt. Nordamer. Nachtf., I, p. 38. = ? M. 4–signata Walk.

DELTOIDÆ.

Lomanaltes lætulus *Grote*. Bull. Buff. Soc. N. S., I, p. 14.
Litognatha nubilifascia *Grote*. Ib., p. 85, pl. 2, figs. 2 ♀, 3 ♂.
Litognatha litophora *Grote*. Ib., p. 86.
Meghypena velifera *Grote*. Ib., p. 87, pl. 2, f. 7 ♀.
Meghypena lentiginosa *Grote*. Ib., p. 87.
Bomolocha laciniosa (*Zeller*). Beit. Kennt. Nordamer. Nachtf., I, p. 18, tab. 2, f. 8.
Hypena toreuta *Grote*. Trans. Am. Ent. Soc., IV (1872), p. 24.
Renia brevirostralis *Grote*. Ib., p. 25, pl. 1, figs. 91, 92.
Renia larvalis *Grote*. Ib., p. 26.

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* Printed in 1873.

Renia centralis *Grote.* Ib., p. 27.
Zanclognatha lævigata *Grote.* Ib., p. 95 (*Herminia*).
Philometra longilabris *Grote.* Ib., p. 99 (*Herminia*).
Tortricodes bifidalis *Grote.* Ib., p. 105.
Heterogramma indivisalis *Grote.* Ib., p. 106 (*Tortricodes*).
Phalænostola larentioides *Grote.* Ib., p. 302.
Phalænophana rurigena *Grote.* Ib., p. 305.
Bomolocha scutellaris *Grote.* Canad. Entomol., V, p. 225.
Hypena olivacea *Grote.* Ib., p. 226.
Philometra serraticornis *Grote.* Trans. Am. Ent. Soc., IV, p. 98.
Macrhypena profecta *Grote.* Ib., p. 104 (*Hypena*).

PYRALIDÆ.

Pseudasopia squamealis *Grote.* Bull. Buff. Soc. N. S., I, p. 172.
Eurycreon chortalis *Grote.* Ib., p. 89, pl. 5, f. 13 ♂.

TORTRICIDÆ.

Conchylis straminoides *Grote.* Bull. Buff. Soc. N. S., I, p. 16.
Grapholitha distema *Grote.* Ib., p. 92.
Nolophana (Asisyra) Zelleri *Grote.* Ib., p. 169.

TINEIDÆ.

Pronuba yuccasella *Riley.* 5th Ann. Rep. Ins. Missouri, p. 151, figs. 74, 75.
Anerastia hæmatica *Zeller.* Beit. Kennt. Nordamer. Nachtf., I, p. 109.

III. RECORD OF COLLECTIONS OF N. Y. HETEROCERA,

FOR THE YEAR 1873.

SPHINGIDÆ.

Sesia gracilis *Gr.-Rob.* Center, June 2, ♂, 13, ♀.
Sesia uniformis *Gr.-Rob.* Albany, June 2, ♂ ♀.
Thyreus Abbotii *Swains.* Albany, May 29, ♂, June 4, ♂ ♀.
Deilephila chamænerii *Harr.* Schenectady, June 4, ♀; Albany, June 4, ♂ ♀, 5, ♂, 6, ♀.
Ceratomia Amyntor (*Hübn.*). Albany, May 21, June 18, larva September 16.
Sphinx drupiferarum *Sm.-Abb.* Albany, June 9, ♂.
Sphinx kalmiæ *Sm.-Abb.* Albany, June 3, 6, ♀.
Sphinx Gordius *Cram.* Albany, June 6, ♀.
Sphinx luscitiosa *Clem.* Albany, June 6, ♀.
Ellema Harrisii *Clem.* Sharon Springs, July 18, ♂.

THYRIDÆ.

Thyris lugubris (*Boisd.*). Center, June 13.

ZYGÆNIDÆ.

Alypia octomaculata (*Fabr.*). Albany, June 3.
Eudryas grata (*Fabr.*). Schenectady, June 16.

BOMBYCIDÆ

Hyproprepia fucosa *var.* miniata. Sharon, August 17.
Euphanessa mendica (*Walk.*). Albany, July 10, 12; Schenectady, July 13, 23.
Arctia virgo (*Linn.*) Sharon, July 16, 22, 26.
Pyrrharctia isabella (*Sm.-Abb.*). Albany, June 7.
Leucarctia acræa (*Drury*). Albany, June 3.
Spilosoma virginica (*Fabr.*). Canaan, August 2.
Euchætes collaris (*Fitch*). Center, June 13.

Halisidota tessellaris (*Sm.-Abb.*). Schenectady, July 9.
Orgyia leucostigma (*Sm.-Abb.*). Albany, July 13, 23.
Lithacodes fasciola (*H.-S.*). Schenectady, July 3.
Ichthyura inclusa *Hübn.* Schoharie, June 7.
Ichthyura albosigma (*Fitch*). Sharon, July 27.
Datana ministra (*Drury*). Sharon, July 8.
Datana Angusii *Gr.-Rob.* Sharon, July 17.
Hyparpax aurora (*Sm.-Abb.*) Center, June 2.
Nerice bidentata *Walk.* Sharon, July 9.
Heterocampa marthesia (*Cram.*) Sharon, July 25.
Dryopteris rosea (*Walk.*). Albany, June 25, 26.
Eacles imperialis (*Drury*). Bethlehem, July 8.
Dryocampa rubicunda (*Fabr.*). Schenectady, June 30, July 3.
Tolype velleda (*Stoll*). Albany, September 26.
Clisiocampa Americana (*Fabr.*). Schenectady, July 3.
Clisiocampa sylvatica *Harr.* Sharon, July 10.

Noctuidæ.

Agrotis scandens *Riley.* Schenectady, August 30.
Agrotis herilis *Grote.* Schenec., July 3, 11, 12, Aug. 11, 17.
Agrotis messoria *Harris.* Buffalo, July 19; Schenec., Aug. 31.
Agrotis clandestina (*Harris*). Schenectady, July 19.
Agrotis baja (*W.-V.*) Schenectady, August 3, 11.
Agrotis haruspica *Grote.* Schenectady, July 10.
Agrotis plecta (*Linn.*). Schenectady, July 10, August 3, 7, 9.
Aplecta herbida *W.-V.* Schenectady, August 11.
Mamestra chenopodii (*W.-V.*) Albany, June 5; Schenectady, July 12, 16, August 3, 5, 7, 11, 30.
Mamestra adjuncta (*Boisd.*). Schenectady, August 4.
Mamestra nimbosa (*Guen.*) *Grote.* Sharon, July 28.
Mamestra grandis (*Guen.*). Albany, June 21.
Hadena sputatrix *Grote.* Schenectady August 3, 7, 9; Sharon, August 15.
Hadena lignicolor (*Guen.*) *Grote.* Schenectady, July 9, 12.
Hadena devastator (*Brace*) *Grote.* Schenectady, July 3.
Hadena arctica *Boisd.* Schenectady, July 7.
Hyppa xylinoides (*Guen.*). Schenectady, June 4, July 31.
Cloantha ramosula *Guen.* Sharon, August 2.
Phlogophora iris *Guen.* Schenectady, June 12.
Gortyna nitela *Guen.* Schenectady, Sept. 23.
Hydroecia sera *Gr.-Rob.* Schenectady, July 12, 16, 19, 20.

Leucania Harveyi *Grote.* Schenectady, July 31, August 4.
Leucania pseudargyria *Guen.* Schenectady, June 30, July 3, 10, 12.
Orthosia ferruginoides *Guen.* Schenec., Sept. 28, 30, Oct. 1, 19.
Cucullia intermedia *Speyer.* Schenectady, June 4.
Cucullia Speyerii *Lint.* Sharon.
Crambodes talidiformis *Guen.* Schenectady, August 9.
Adipsophanes miscellus *Grote.* Schenectady, July 16.
Placodes cinereola *Guen.* Schenec., June 30, July 3, 12, 16, 20, August 7; Albany, June 9, August 20.
Abrostola urentis *Guen.* Schenectady, August 3.
Plusia ampla *Walk.* Schenectady, July 12.
Plusia simplex *Guen.* Schenectady, June 4.
Plusia precationis *Guen.* Albany, June 5; Schenec., Sept. 3.
Plusia ærea *Hübn.* Schenectady, July 3, 12.
Plusia æroides *Grote.* Schenectady, July 26, August 3.
Lygranthœcia marginata (*Haw.*). Schenectady, August 3.
Plagiomimicus pityochromous *Grote.* Sche., July 31, Aug. 4.
Erastria musta *Grote.* Schenectady, July 3.
Erastria carneola *Guen.* Schenec., June 16, July 11, Aug. 3; Albany, June 5, July 24.
Erastria nigritula *Guen.* Schenec., Aug. 7; Albany, May 23, July 24.
Acontia erastroides *Guen.* Schenectady, July 30.
Acontia candefacta *Hübn.* Schenectady, August 30.
Xanthoptera coccineifascia *Grote.* Buffalo, July 19.
Drasteria erechtea *Cram.* Schoharie, June 8; Schenec., July 12; Canaan, August 2.
Euclidia cuspidea (*Hübn.*). Schenectady, June 7.
Ophiusa bistriaris *Hübn.* Schenectady, July 2.
Agnomonia anilis *Drury.* Bethlehem, June 6.
Catocala retecta *Grote.* Bethlehem, September 2, ♂.
Catocala unijuga *Walk.* Bethlehem, September 2, ♂.
Catocala Meskei *Grote.* Albany, September 20.
Catocala Briseis *Edw.* Schenectady, September 14, ♂.
Catocala parta *Guen.* Bethlehem, September 2, ♂.
Catocala ultronia (*Hübn.*). Sharon, August 1, ♂.
Catocala concumbens *Walk.* Bethlehem, September 16, 27
Catocala amatrix (*Hübn.*). Albany, September 2, ♂.
Catocala cara *Guen.* Albany, September 2, ♂, 10, 18, ♀.
Catocala cerogama *Guen.* Sharon, July 28, ♂

Catocala piatrix *Grote.* Bethlehem, September 2, ♂.
Catocala palæogama *Guen.* Sharon, August 20, ♂.
Catocala Clintonii *Grote.* Sharon, July 27, ♂.
Catocala polygama *Guen.* Sharon, July 13, ♂, 17, ♀, 27.
Catocala nuptula *Walk.* Sharon, August 2, ♂, 18, ♂.

Deltoidæ.

Litognatha nubilifascia *Grote.* Bethlehem, July 8; Olean, July 17.
Philometra longilabris *Grote.* Olean, July 17.
Philometra serraticornis *Grote.* Olean, July 17.
Rivula propinqualis *Guen.* Schenectady, July 3, 12, Sept. 1.
Renia centralis *Grote.* Sharon, August 17.
Helia phæalis *Guen.* Schenectady, July 11, 31.
Hypena evanidalis *Rob.* Albany, June 29.
Bomolocha laciniosa (*Zell.*). Schenectady, July 10, 31.
Bomolocha abalienalis (*Walk.*). Schenectady, June 25.
Lomanaltes lætulus *Grote.* Schenectady, July 10, 20.
Meghypena lentiginosa *Grote.* Sharon, July 12, August 9.
Chytolita morbidalis (*Guen.*) *Grote.* Schenectady, June 16.
Palthis angulalis *Hübn.* Schenectady, September 1.

Phalænidæ.

Eutrapela transversata *Drury.* Schenectady, August 4, 31.
Azelina Hübneraria *Guen.* Schenectady, August 3.
Hemerophila unitaria *Her.-Sch.* Watkins, June 29.
Cabera erythemaria *Guen.* Schenectady, August 3.
Corycia vestaliata *Guen.* Schoharie, June 7.
Hæmatopis grataria (*Fabr.*). Schenectady, July 3, August 6
Abraxas ribearia *Fitch.* Schenectady, July 12.
Coremia propugnata *W.-V.* Schenectady, July 12, 21.
Coremia ferrugata *Alb.* Schenectady, July 19.
Cidaria gracilineata *Guen.* Schenectady, June 30, July 3, 10, 12.
Cidaria diversilineata *Hübn.* Schenectady, June 30, July 3, 10, 12, August 3, 31, September 15.
Baptria albovittata (*Guen.*). Schenectady, June 10, July 24.
Nemoria chloroleucaria *Guen.* Schenectady, August 3, 7.

Pyralidæ.

Botis intricitalis *Zieg.* Schenectady, June 16.

Botis terrealis *Treits.* Schenectady, June 1, 17, July 7, 31, August 3, 7, 9, September 1, 31.
Botis thesealis *Led.* Albany, July 22, August 9.
Asopia olinalis (*Guen.*). Schenectady, July 31.
Desmia maculalis *Westw.* Schenectady, July 10.
Botis marculenta *Gr.-Rob.* Schenectady, August 10, Sept. 3.
Pyralis farinalis *Linn.* Schenectady, June 18.

Nolaphana (Asisyra) Zelleri *Grote.* Schenectady, June 5.
Nolaphana malana (*Fitch.*). Sharon, August 1.
Tortrix alisellana *Rob.* Bethlehem, June 25.
Tortrix violaceana *Rob.* Schoharie, June 7.

PLATES AND EXPLANATIONS.

EXPLANATION OF PLATE I.

Ustilago Erythronii Clinton.

Page 115.

Fig. 1. A leaf of *Erythronium Americanum* bearing the Ustilago.
" 2. Two spores magnified 400 diameters.

Agaricus (Hebeloma) fuscodiscus Peck.

Page 95.

Fig. 3. A young plant.
" 4. Three plants of ordinary size.
" 5. Vertical section of a pileus.
" 6. Four spores x 400.

Dothidea Dalibardæ Peck.

Page 109.

Fig. 7. A leaf of *Dalibarda repens* bearing the Dothidea.
" 8. An ascus containing spores x 400.
" 9. Three spores x 400.

Sphæria Arceuthobii Peck.

Page 111.

Fig. 10. A plant of *Arceuthobium pusillum* bearing three tufts of the Sphæria.
" 11. A capsule bearing a tuft of the Sphæria, magnified.
" 12. Two perithecia more highly magnified.
" 13. An ascus containing young spores x 400.
" 14. Four mature spores x 400.

Valsa Peckii Howe.

Page 109.

Fig. 15. A piece of wood of *Vaccinium corymbosum* bearing clusters of the Valsa.
" 16. A vertical section of a cluster and the surrounding wood magnified.
" 17. An ascus containing spores x 400.
" 18. Five spores, three of them immature, x 400

Peridermium decolorans Peck.

Page 104.

Fig. 19. Tip of a branch of *Abies nigra*, its leaves bearing the Peridermium.
" 20. A leaf bearing three peridia, slightly magnified.
" 21. A spore x 400.

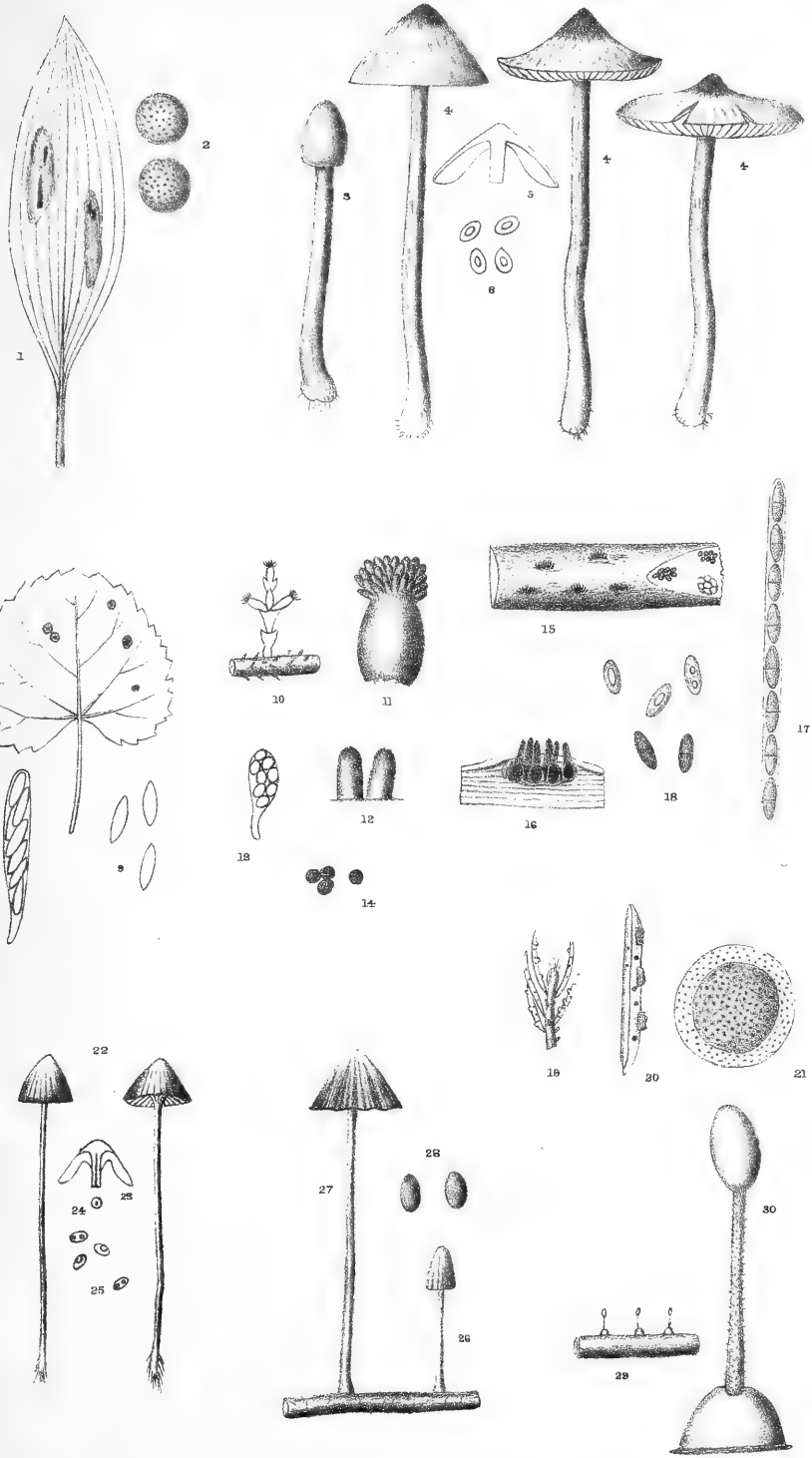

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PLATE I. — (*Continued.*)

AGARICUS (*MYCENA*) *DELECTABILIS Peck.*

Page 93.

FIG. 22. Two plants of ordinary size.
" 23. Vertical section of a pileus.
" 24. Transverse section of a stem.
" 25. Four spores x 400.

COPRINUS AQUATILIS Peck.

Page 96.

FIG. 26. A young plant.
" 27. A mature plant.
" 28. Two spores x 400.

TYPHULA FILICINA Peck.

Page 100.

FIG. 29. A piece of a fern stem bearing three plants.
" 30. A plant magnified.

EXPLANATION OF PLATE II.

Pestalozzia Mariæ Clinton.

Page 102.

Fig. 1. Apical part of a leaf of *Rhododendron maximum* bearing the Pestalozzia.
" 2. Three spores, one with the peduncle attached, x 400.

Polyporus volvatus Peck.

Page 98.

Fig. 3. A plant attached to a piece of wood.
" 4. A plant with the centrally ruptured volva cut loose from the anterior portion of the pileus and pendent, revealing the pores.
" 5. Vertical section of a plant with heaps of spores on the inner surface of the ruptured volva.
" 6. Four spores x 400.

Oidium corticale Peck.

Page 105.

Fig. 7. A piece of bark bearing tufts of the Oidium.
" 8. Flocci and spores x 400.

Helicosporium ellipticum Peck.

Page 103.

Fig. 9. A piece of wood bearing tufts of the Helicosporium.
" 10. Anastomosing flocci x 400.
" 11. A coiled spore, lateral view, x 400.
" 12. A coiled spore, vertical view, x 400.

Puccinia Veratri Niessl.

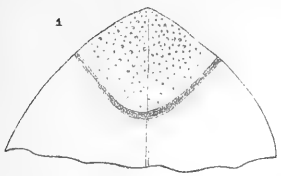
Page 103.

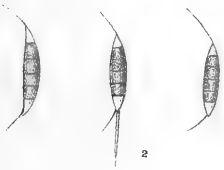
Fig. 13. Apical part of a leaf of *Veratrum viride* bearing the Puccinia.
" 14. Two spores x 400.

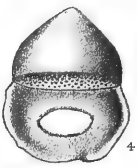
Agaricus (Omphalia) Rhododendri Peck.

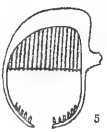
Page 94.

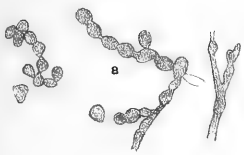
Fig. 15. Two plants attached to a piece of bark.
" 16. A plant magnified.
" 17. Vertical section of a pileus magnified.
" 18. Transverse section of a stem magnified.
" 19. Four spores x 400.

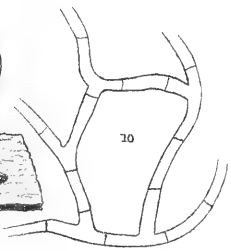


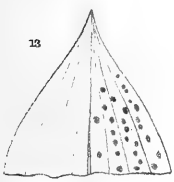


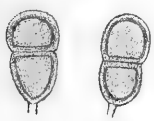


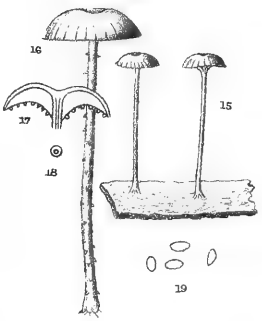


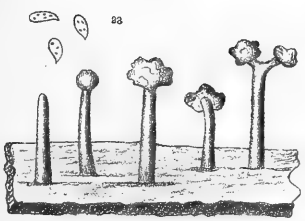












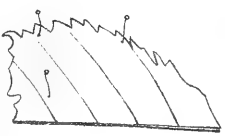


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PLATE II. — (*Continued.*)

Clavaria spathulata Peck.

Page 100.

Fig. 20. Part of a branch of *Carya alba* bearing five plants.
" 21. A plant magnified.

Tremella (*Coryne*) *stipitata Peck.*

Page 100.

Fig. 22. A piece of wood bearing five plants.
" 23. Three spores x 400.

Peridermium balsameum Peck.

Page 104.

Fig. 24. A leaf of *Abies balsamea* bearing the Peridermium.
" 25. Part of a leaf with one closed and one ruptured peridium, magnified.
" 26. A spore x 400

Marasmius minutissimus Peck.

Page 97.

Fig. 27. Part of a leaf bearing three plants.
" 28. A plant magnified.

EXPLANATION OF PLATES.

The following Plates, 9–13, inclusive, are illustrative of a paper on *New Species of Fossils from the Vicinity of Louisville, Kentucky, and the Falls of the Ohio,* in the 24th Report on the State Museum of Natural History, pp. 181–200[a]. The plates were omitted in the publication of the Report for want of time for their preparation. Explanations refer to pages of 24th Report.

PLATE IX.

Orthis rugæplicata H. & W.

Page 182.

Figs. 1, 2, 3. Dorsal, ventral and profile views of specimen enlarged two diameters.

Orthis Nisis H. & W.

Page 181.

Figs. 4–6. Dorsal, ventral and profile views of a large individual.
" 7, 8. Profile and dorsal views of a smaller individual.

Productus (Productella) subaculeata Murch., var. cataracta H. & W.

Page 198.

Figs. 9, 10. Ventral and profile views.

Spirifera rostellum H. & W.

Page 182.

Figs. 11–13. Dorsal, ventral and front views.

Cyrtina crassa Hall.

Page 198.

Figs. 14, 15, 16. Dorsal, cardinal and front views.

Spirifera radiata Sow.

Page 196.

Figs. 17, 18. Dorsal and ventral views of a specimen from the horizon of the Clinton group, near Louisville, Ky.

Cyrtia trapezoidalis Hisinger.

Page 183.

Figs. 19, 20, 21. Dorsal, front and cardinal views of specimen.

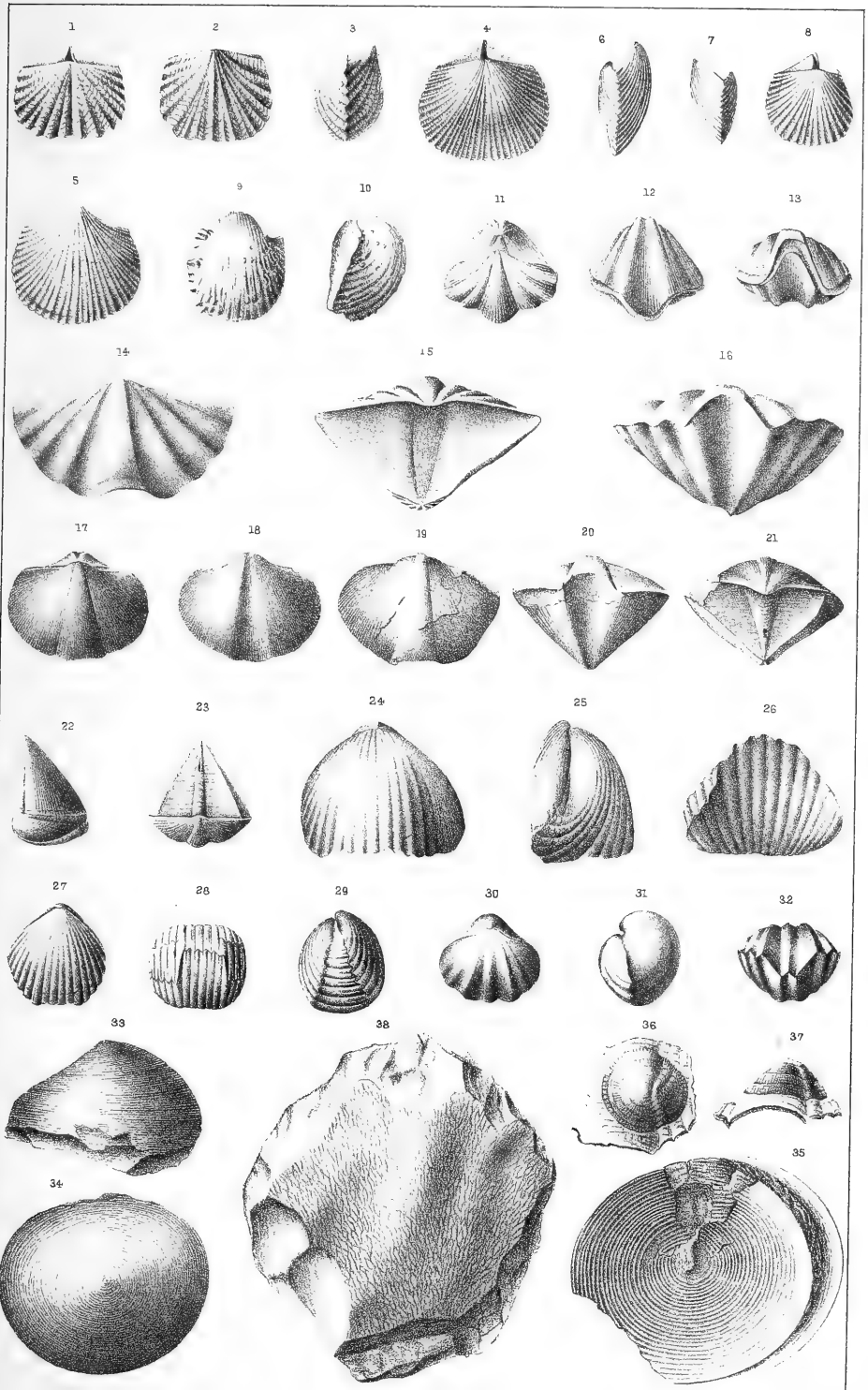
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PLATE IX. — (*Continued.*)

Cyrtia exporrecta Wahl. = ? *C. Myrtia Bill.*

Pages 183 and 196.

Figs. 22, 23. Profile and cardinal views. This and the preceding species are regarded as from the horizon of the Clinton Group.

Rhynchonella Tennesseensis Roemer.

Page 197.

Figs. 24, 25, 26. Dorsal, profile and front views.

Rhynchonella Saffordii Hall.

Page 197.

Figs. 27–29. Dorsal, front and profile views.

Pentamerus nucleus H. & W.

Page 200 a.

Figs. 30–32. Dorsal, profile and front views.

Discina (Orbiculoidea?) grandis Vanuxem.

Page 187.

Figs. 33, 34. Lateral and vertical views of a specimen.
Fig. 35. Ventral side of a larger individual.

Crania Bordeni H. & W.

Page 187.

Figs. 36, 37. Vertical and profile views of a specimen attached to the valve of a Spirifer.

Dictyonema pergracilis H. & W.

Page 181.

Fig. 38. View of the specimen described.

PLATE X.

PENTAMERUS NYSIUS var. TENUICOSTA H. & W.

Page 185.

FIG. 1. Dorsal view of a young individual.

FIGS. 2, 3. Dorsal and cardinal views of a larger specimen, showing the characters of this variety.

PENTAMERUS NYSIUS var. CRASSICOSTA H. & W.

Page 185.

FIGS. 4, 5. Dorsal and profile views of a small, coarsely plicated individual.

" 6, 7. Dorsal and profile views of a large individual.

PENTAMERUS LITTONI Hall.

Page 186.

FIGS. 8, 9. Profile and dorsal views of a rotund, finely plicated specimen referred with doubt to this species.

PENTAMERUS? KNAPPI H. & W.

Page 184.

FIGS. 10, 11, 12. Dorsal, profile and cardinal views.

PENTAMERUS OBLONGUS Sow., var. CYLINDRICA H. & W.

Page 183.

FIGS. 13, 14. Dorsal and profile views

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Plate 10

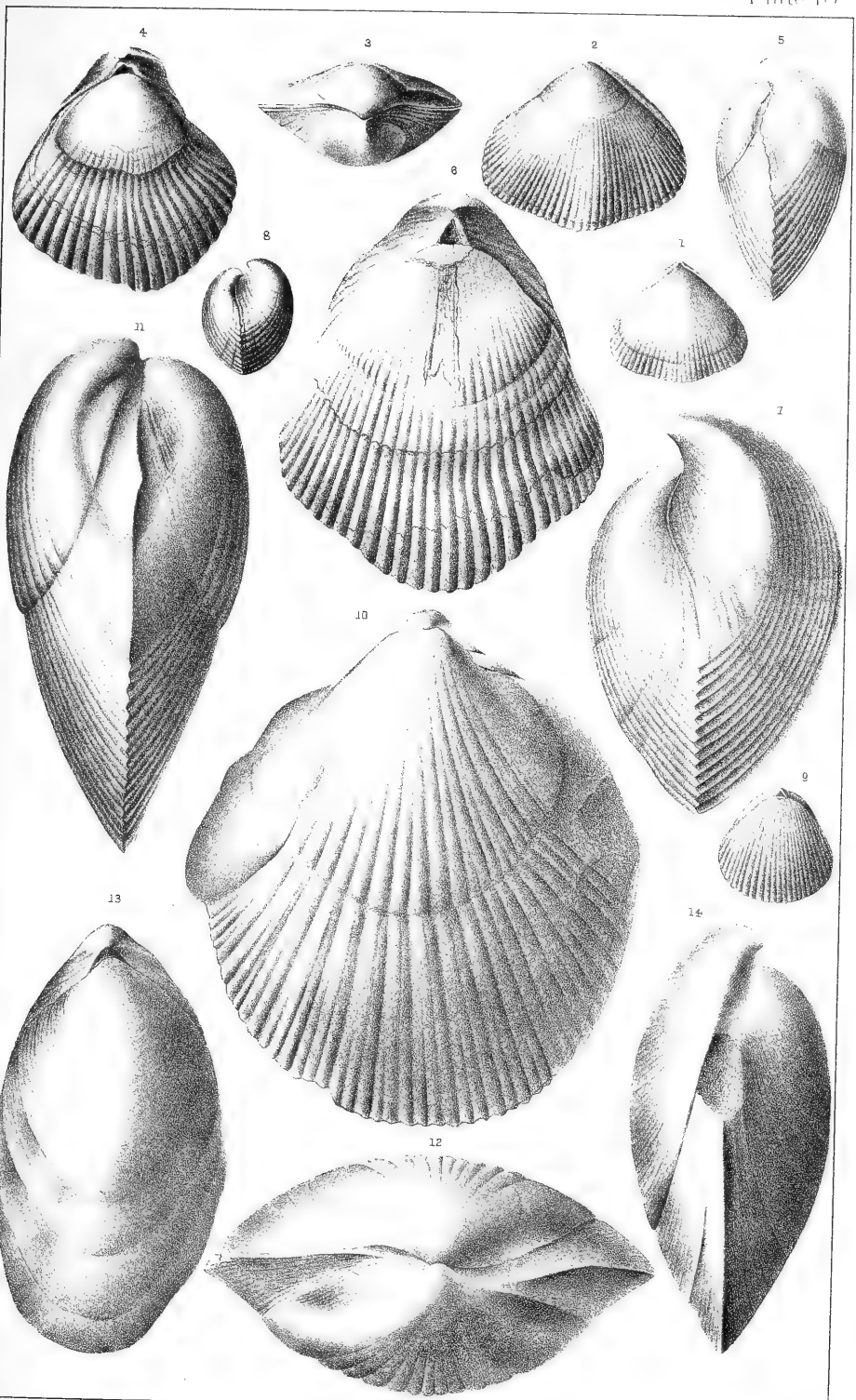

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PLATE XI.

Aviculopecten crassicostata H. & W.

Page 188.

Fig. 1. View of left valve.

Cypricardinia inflata (*Conr.*), *var. subequivalvis H. & W.*

Page 189.

Figs. 2, 3. Right valves enlarged.
Fig. 4. A left valve enlarged.

Cypricardinia? cylindrica H. & W.

Page 190.

Figs. 5, 6. Left valve and cardinal view.

Nuculites triquetra Conr.

Page 199.

Fig. 7. Cast of a left valve.

Nucula niotica H. & W.

Page 190.

Fig. 8. The cast of a right valve twice enlarged.
Fig. 11. A right valve showing surface-markings; twice enlarged.

Nucula Neda H. & W.

Page 191.

Figs. 9, 10. The right and left sides of an internal cast; enlarged two diameters.

Limoptera cancellata var. occidens H. & W.

Page 199.

Fig. 12. View of the left side.
" 13. A cardinal view showing the anterior muscular impressions.
" 14. A view of the right side of the upper portion of the specimen.
" 15. An enlargement of the surface.

Dystactella (*Tellinomya*) *subnasuta H. & W.*

Pages 191 and 192.

Figs. 16, 17. Right and left sides of the specimen; the latter an internal cast.

Yoldia? valvulus H. & W.

Page 190.

Figs. 18–20. Left, right and cardinal views of the same specimen.

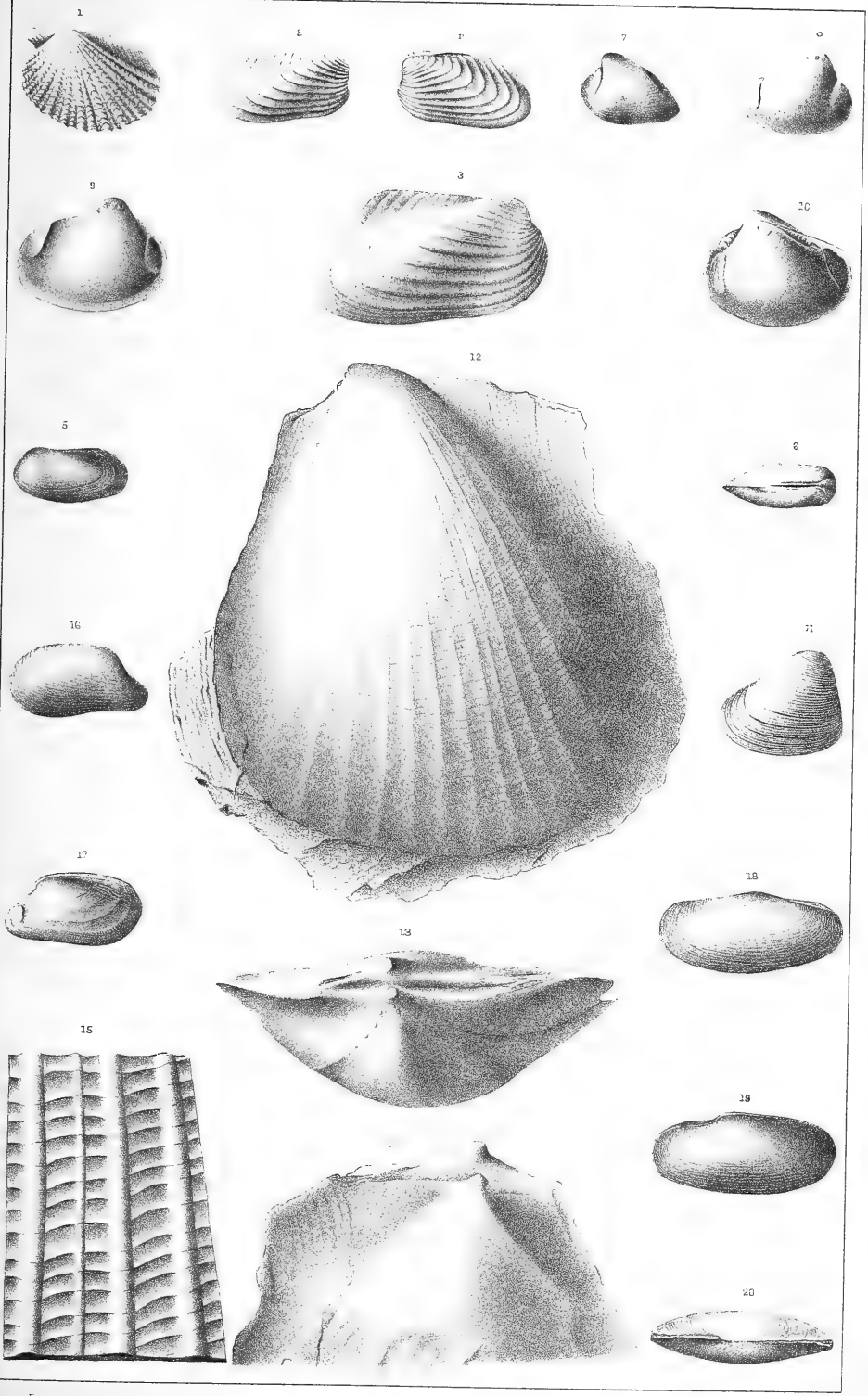
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PLATE XII.

Ptychodesma Knappiana H. & W.

Page 192.

Figs. 1, 2. A right valve and cardinal view of a specimen.

" 3, 4, 5. Right, left and cardinal views of another individual.

Fig. 6. An enlarged view of the hinge area of specimen, fig. 2, showing the striated cartilage area; the internal hinge plate is unknown and this figure is not intended to represent it.

Grammysia (Leptodomus) secunda var. gibbosa H. & W.

Page 199.

Figs. 7, 8. Cardinal and left views of the specimen.

Cardiopsis crassicosta H. & W.

Page 188.

Fig. 9. A right valve of the species.

Lucina (Paracyclas) lirata Conr.

Page 200.

Figs. 10, 11, 13. Views of right and left valves of specimens presenting the ordinary features of the species.

Fig. 12. A small individual showing unusually fine concentric ridges.

Lucina (Paracyclas) elliptica Hall, var. occidentalis H. & W.

Page 189.

Figs. 14–16. Left, right and cardinal views of a well-preserved specimen of large size.

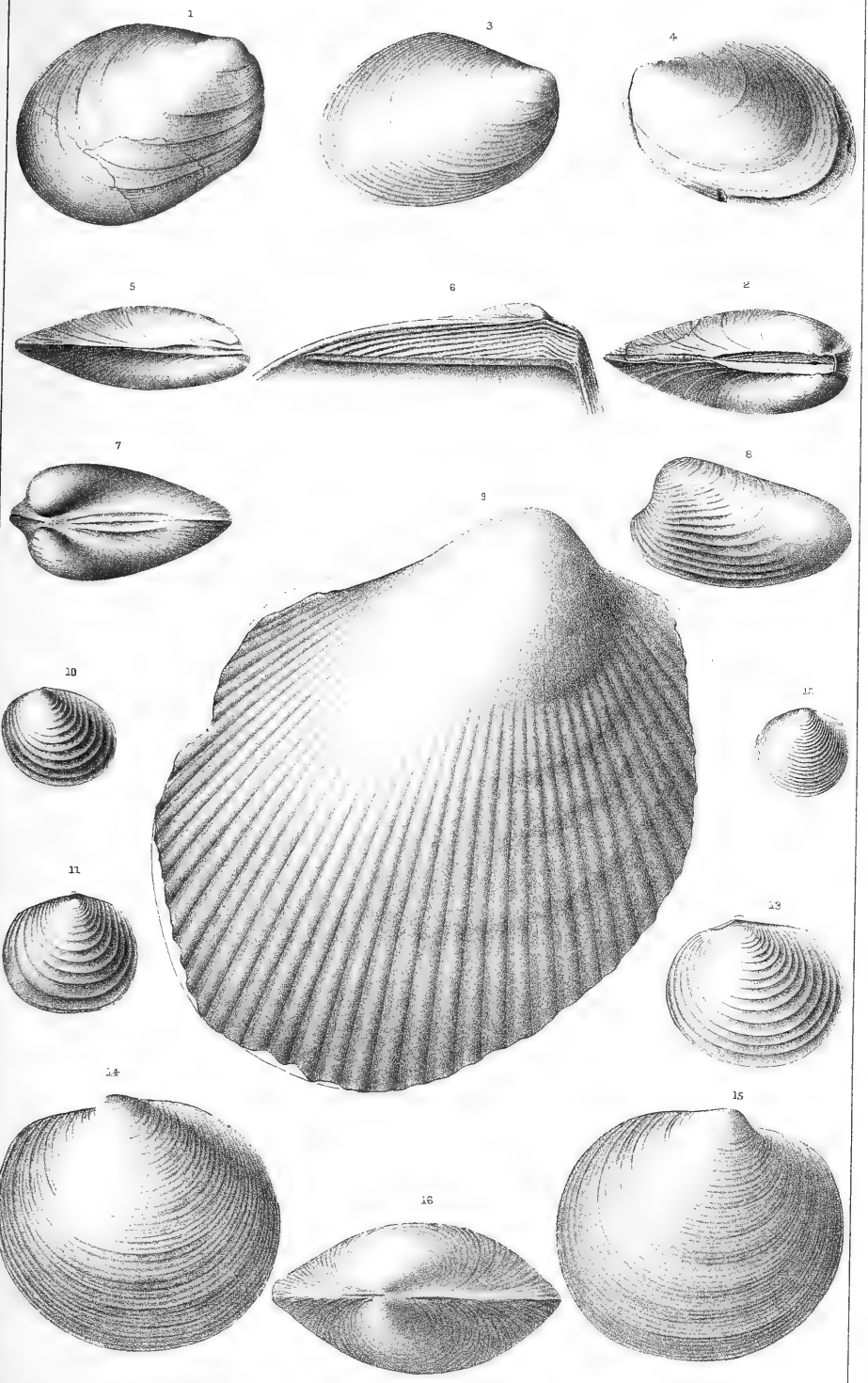
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PLATE XIII.

Bellerophon Leda Hall.

Page 200.

Fig. 1. Dorsal view of a specimen.

Euomphalus (Cyclonema) rugælineata H. & W.

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Fig. 2. A view of the summit of the specimen.

Trochonema Yandellana H. & W.

Page 194.

Fig. 3. View of the aperture.

Trochonema rectilatera H. & W.

Page 193.

Fig. 4. View of the aperture.

" 5. View of the opposite side of the shell.

Cyclonema cancellata Hall.

Page 197.

Figs. 6, 7. Views of the opposite sides of a large individual.

Murchisonia petila H. & W.

Page 186.

Fig. 8. View of the spire.

Pleurotomaria (Isonema) imitator H. & W.

Page 195.

Figs. 9, 10. Views of summit and aperture.

Trochonema emacerata H. & W.

Page 193.

Fig. 11. View of the spire of an imperfect specimen.

Isonema bellatula Hall.

Page 200.

Fig. 12. A view of the spire from the anterior side.

Bucania devonica H. & W.

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Figs. 13 14. Lateral and profile views of a specimen.

Loxonema hydraulica H. & W.

Page 193.

Fig. 15. View of the spire and part of aperture.

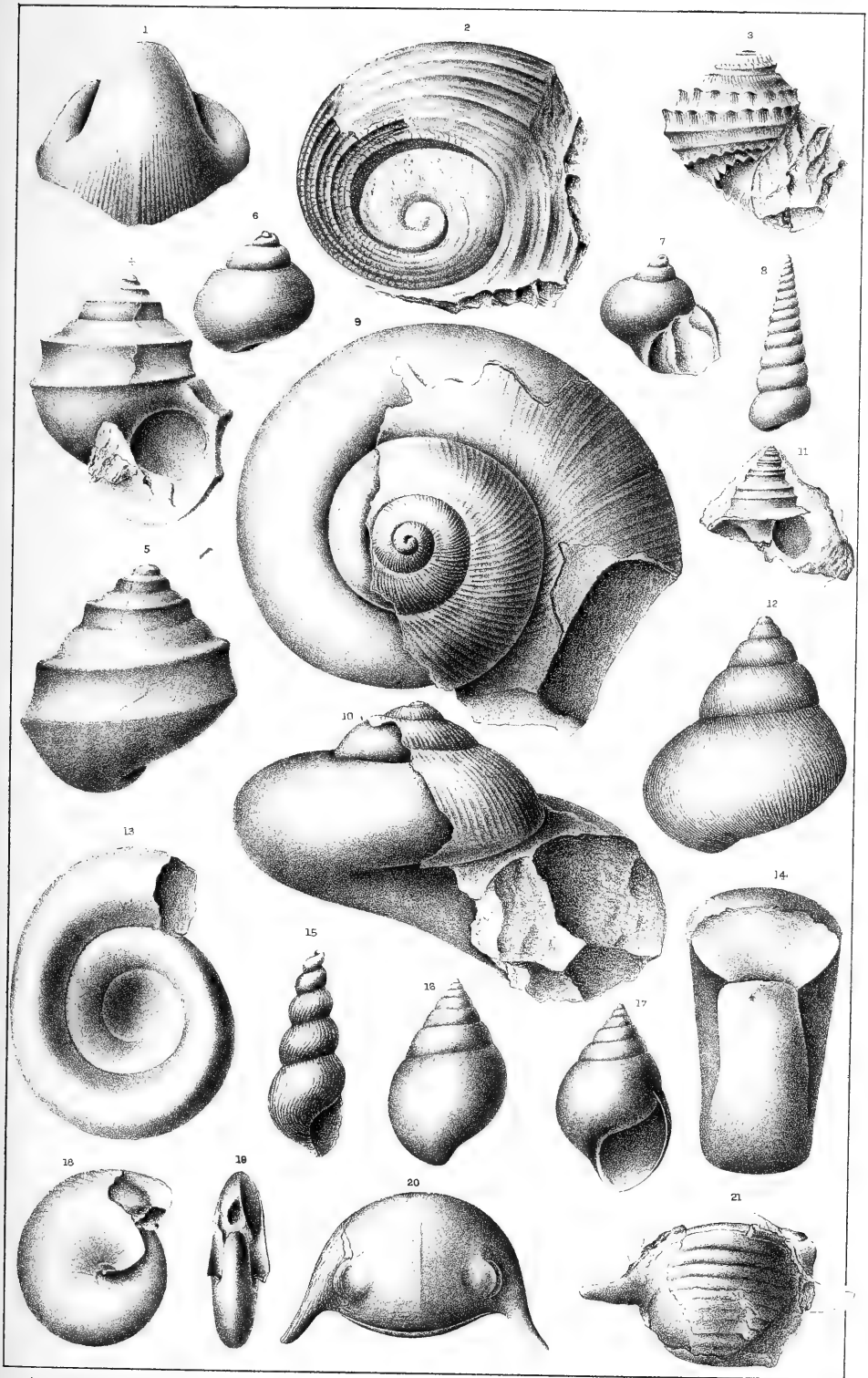
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PLATE XIII. — (*Continued.*)

Polyphemopsis Louisvillæ H. & W.

Page 193.

Figs. 16 17. Two views of a specimen enlarged to two diameters.

Goniatites discoideus Hall, var. Ohioenses H. & W.

Page 200.

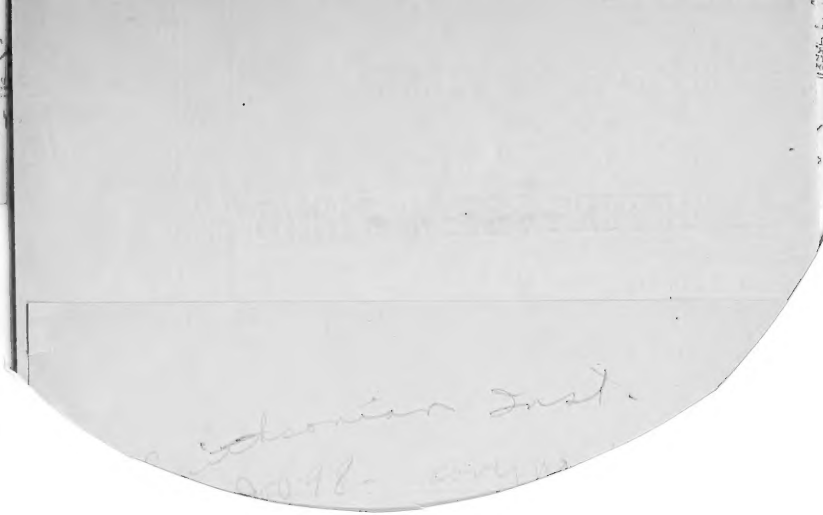
Figs. 18, 19. Lateral and profile views of a specimen.

Illænus cornigerus H. & W.

Page 186.

Fig. 20. View of the upper side of cephalic shield with the spines partially restored.

" 21. View of the thoracic portion of the body with the cephalic spines.



Lower Helderberg Group.

Onondaga Salt Group.

Niagara Group.

MAP

ILLUSTRATING THE PAPER ON THE RELATIONS

OF THE

NIAGARA & LOWER HELDERBERG FORMATIONS

AND THEIR

GEOGRAPHICAL DISTRIBUTION.

BY

JAMES HALL.

1874.

Edits by Weed, Parsons & Co., Albany N.Y.